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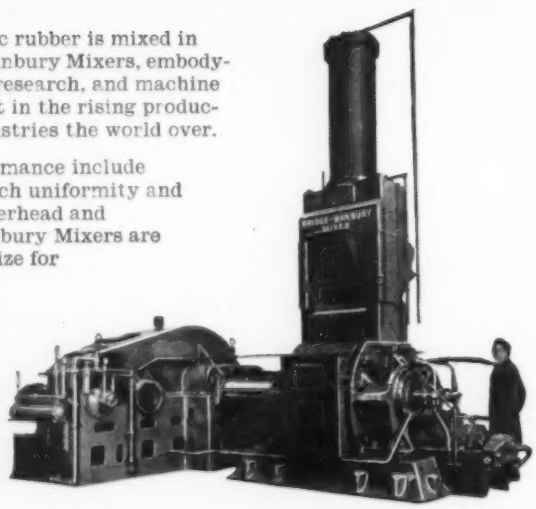

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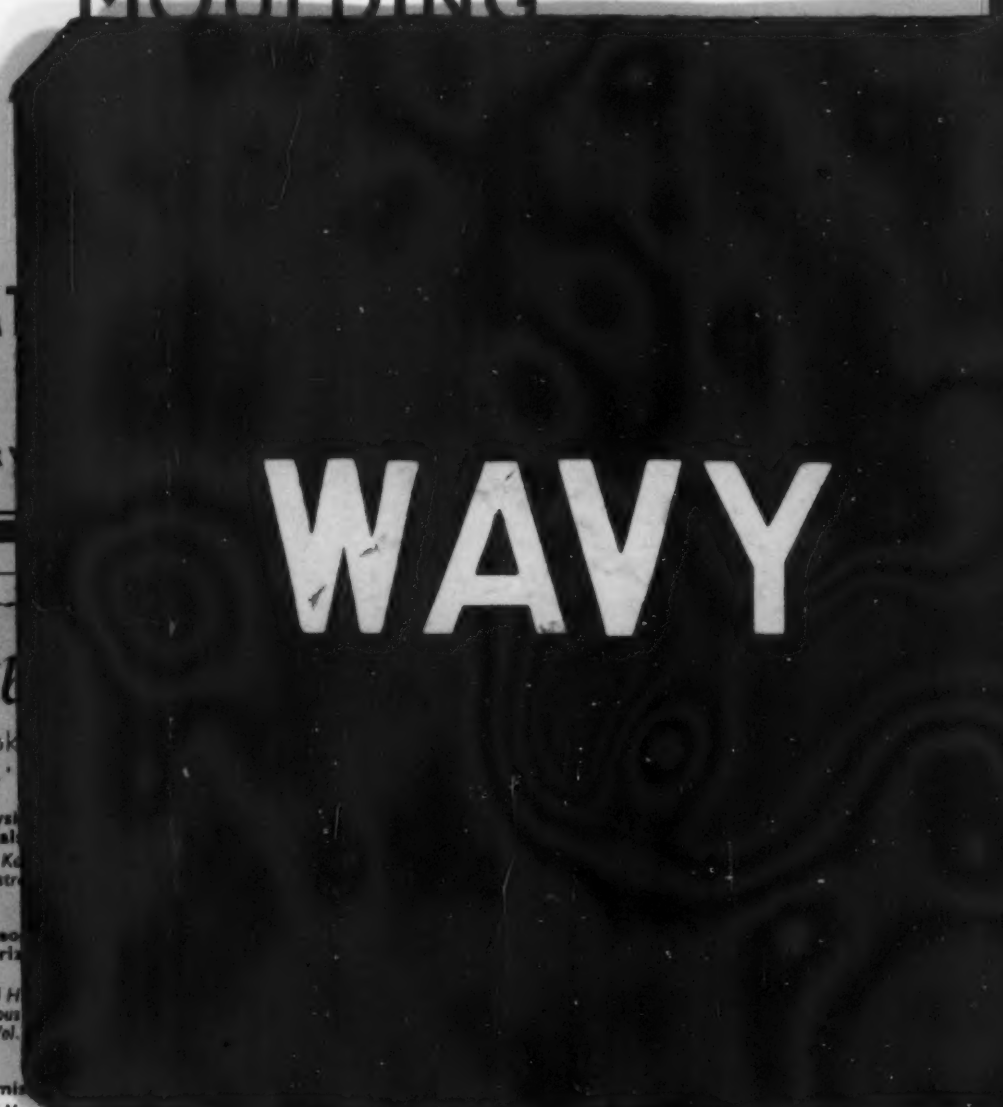

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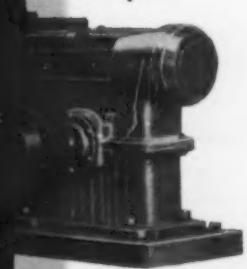

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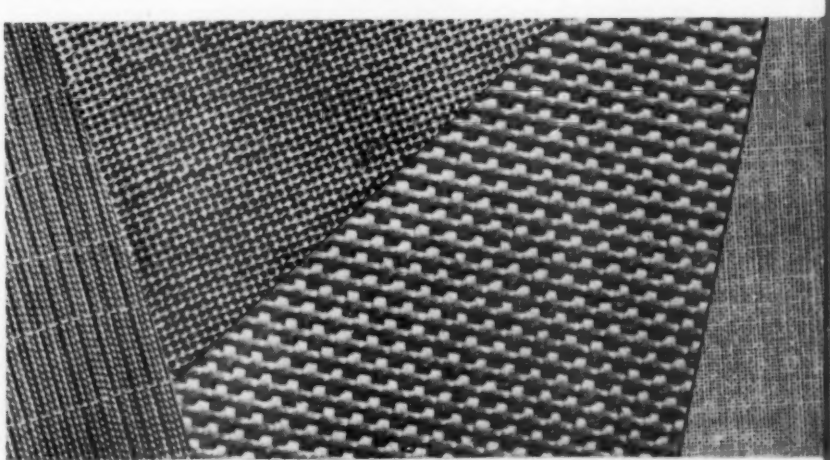

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Volume 138 **Price 1s. Post free 1s. 4d.** **No. 13**

IN ITS 76th YEAR

March 26 1960

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	Ethyl alcohol	24°C	97	+2	1.7
	Aniline	24°C	100	−1	3
	Tricresyl phosphate	149°C	93	−11	24
	Acetone	24°C	—	−11	271
FUELS AND LUBRICANTS	Petroleum-based Jet Engine Fuel (JP5)	24°C	100	+1	0.4
	Ref. fuel B (70 isooctane, 30 toluene)	24°C	93	+1	2.5
	ASTM No. 3 oil	149°C	95	−1	4.3
	Turbo oil No. 15 diester lubricant (Mil I 7808)	205°C	60	−6	19.6
HYDRAULIC FLUIDS	Transmission fluid Type A	100°C	77	−1	1.5
	Oronite 8200 silicate ester	205°C	93	0	1.8
	OS-45 silicate ester	205°C	62	−3	11.1
	Skydrol 500 phosphate ester	149°C	—	−32	270
ACIDS AND BASES	Sodium hydroxide 46.5%	24°C	75	+1	2.1
	Sulphuric acid, fuming	24°C	58	−4	4.8
	Hydrofluoric acid 48%	24°C	98	+2	4.8
	Hydrochloric acid 36.5%	24°C	81	−8	7.3
	Nitric acid, red fuming (special acid-resistant compound)	24°C	—	—	16
	Acetic acid, glacial	24°C	—	−10	61.6

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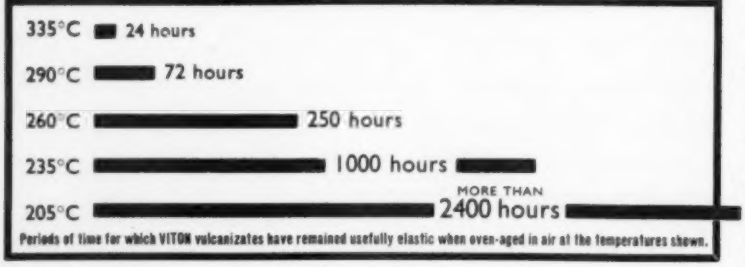

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NOTES of the WEEK

Decimals

IT was recently announced that a large British firm, Gestetner Ltd., is planning to introduce this year the decimal system of accounting not only for all its export business but also for its inter-office transactions. The change-over to decimals is a simple matter so far as export business is concerned. It will greatly simplify things for those countries who already use decimal currencies. In fact, the only difficulty will be with the countries, decreasing in number, which have a sterling currency. Because calculating machines work in decimals, it is anticipated that great savings of time and money will be made in internal accounting. In stock accounting, for instance, where three sums are now necessary—converting sterling into decimals, obtaining the answer and converting it back into sterling—only one calculation will be needed. It is intended also that although employees' pay dockets will still be expressed in sterling, the decimal equivalent will also be on the card. The hope is that this will help workers to a wider understanding of the system and make it possible eventually to give the figure in decimals only.

And Metric

IN this connexion it is interesting to recall that an internationally known company in the field of latex foam products, Bintex Ltd., uses metric measurements for all processing work in their Harrogate factory. It is encouraging to know, in view of fears usually expressed when changes in our archaic systems are suggested, that the Company's experience is that workers find no difficulty in learning and working in centimetres, grammes, litres, and so on.

Conversion, in industry, to metric measurements really seems essential if we are to continue to compete with manufacturers on the Continent. It is difficult enough to sell in metric markets products made to feet and inches; it is an added burden to have to make goods for the home market in feet and inches and for the export market in metric sizes. As for decimal coinage, enough suggestions must have been made by now for the simplest to be selected and adopted.

Through a Pack Clearly

A RECENT consumer research test, featured in an advertisement issued by the Glass Manufacturers' Federation, is stated to have shown that 73% of shoppers would prefer to buy glass packed foods, drinks and pharmaceuticals. The test is described as having featured identical goods packed in alternative containers. The alternatives illustrated in the advertisement were tins, or cans, and paper packets. No mention was made as to whether the prices were identical. The test as reported was, of course, good publicity for the manufacturers of glass containers. However, it showed equally and very clearly the colossal potential for transparent containers made of plastics materials.

Plastics containers of a slightly different kind are also in the news: in this case, disposable one-way packs. These, perhaps surprisingly because of the price factor, are made from polythene. The secret is in the patented closure which has made it possible for Lacrinoid Products Ltd., of Gidea Park, Essex, to blow-mould containers of a wall thickness and weight reduced to such an extent that the relatively high cost of the material no longer presents an obstacle. A sample 'Lacropac' container, already approved by the GPO for carriage through the post, has been in this office for the past few days. It reached us full of water. Apart from the advantages of light weight and space saving and the fact that there is no need for protective packaging, the makers claim also unbreakability. Our Lacropac has stayed on the floor and we have invited all and sundry, the long and the short and tall, to carry out Lacrinoid's suggestion that it be stood on, sat on and otherwise ill-treated. Hesitation, because the container does not appear so strong, has always been followed by wonderment. Heavy men have balanced on it with all their weight on one foot. It has survived. The stopper design is such that it cannot be forced out by pressure on the container. This container would certainly appear to be the answer to many one-way packaging problems.

European Plastics Exhibitions

AT the meeting in Paris on March 4 and 5 of representatives of EEC countries plastics industry federations (reported elsewhere in this issue), there was complete agreement that the organization of specialist plastics industry exhibitions was getting out of hand. There seemed to be, in some cases, little or no liaison between the organizers and the industry itself. Agreement was reached that the principle of rotation as between EEC countries should be retained. The following dates for specialist plastics industry exhibitions were issued: 1960, Holland; 1961, Belgium; 1962, France; 1963, Germany; 1964, Italy. This is a valuable and by no means overdue decision. It will simplify matters for all concerned.

NEWS *Briefs*

MORE PLASTICS AND RUBBER RAW MATERIALS
TOYS USE MORE POLYTHENE—ITALY SELLS RSS
CANADIAN CONSUMPTION—METAL BOX EXPAND

●**United Kingdom**—A new £5m. expansion plan announced on Tuesday by British Hydrocarbon Chemicals Ltd. includes a new plant that will double existing capacity for butadiene manufacture. The two other new major plants will be for the manufacture of methanol and ethylene dichloride. Full story on page 465.

●**Venezuela**—A US concern will establish in Venezuela (at Maracay in Aragua State) a factory for the manufacture of plastics packaging materials. It is said that demand for such materials in Venezuela has gone up tenfold since 1945.

●**Australia**—A new company which will make truck wheels and rims has been formed by Dunlop Rubber Australia, Olympic Consolidated Industries and Ralph Mckay. Called Wheels and Rims Australia Pty. it will have starting capital of £A250,000 held equally by the three partners.

●**Canada**—Consumption of all rubber in January rose to 9,630 long tons—500 tons more than January last year.

●**United Kingdom**—Plastics output has gone up 200% since 1950, while output of steel has risen less than 35%, said Dr R. Beeching, development director of I.C.I., when delivering the James Forrest lecture—called 'Plastics in Engineering'—to the Institution of Engineers this week. Volume of plastics produced, he said, is now a quarter that of steel.

●**South Africa**—A company called Insulation Equipments has been formed to make plastic laminates for the interior of railway coaches. Orders amounting to £¼m. are expected to be completed in the first four years.

●**United Kingdom**—Metal Box is planning to lease a factory for its plastics group on the Newburn Industrial Estate, Newcastle. It will make plastic containers. Purchase of an adjacent site is being negotiated with a view to building what is called a major plastics unit to meet constantly increasing demand in the North.

●**New Guinea**—Kerema Rubber Ltd., of New Guinea, increased its sheet rubber production by 29,825lb. to 422,070lb. for the year 1959, the company has announced. The average price for all grades of rubber sold during 1959 was 31.99 Australian pence a lb., or 4.24d. a lb. more than for 1958. Production costs were lowered by 1.82d. a lb.

●**Australia**—B. F. Goodrich has opened its new tyre manufacturing plant in Melbourne. J. W. Keener, president, said that by the end of 1960 Goodrich will be manufacturing in 16 countries. The company has also just opened a new tyre plant in Brazil.

●**Guatemala**—Extrudoplast S.A. is now producing three-colour printing on polythene sheeting and bags. The company plans to manufacture other polythene containers in the near future.

●**Italy**—The Italian Ministry of Transport is asking for tenders for the sale of 1,500 tons of natural crude RSS rubber from the Government stockpile. Bids must be received by March 29 and must be for lots of not less than ten tons.

●**United States**—US Chemical Co. is to carry out an expansion programme to increase production of synthetic rubber by 10% to 156,000 long tons annually, at its Port Neches, Texas plant. Company sources said the expansion will be mainly centred in additional drying and carbon black masterbatch production facilities.

●**United Kingdom**—Baker Perkins Ltd. have secured a contract worth nearly half a million pounds for pneumatic handling and mixing equipment which will be installed at Shell Chemical's new polyolefines plant at Carrington.

●**United States**—The toy industry in 1960 will use about 14 million lb. of linear polythene—almost double the amount used in the previous year—according to a spokesman of Phillips Chemical Co. Phillips estimates that 7½ million lb. of linear resin moved into the field last year. In 1958, there were 16 million lb. sold—but 14 million lb. went into one product, hula-hoops.

●**India**—The leader of a six-member Indian Plastics Trade Export Delegation which recently visited Kenya, Tanganyika, Uganda, Zanzibar and Mauritius to explore the possibilities of increasing India's exports, stated in Bombay recently that there was a great export potential for various plastics items in those countries.

'The PM's livid—this new feller for Harrow West can't get tyres cheap after all—pass it on!'—477

For the benefit of overseas readers, it should perhaps be explained that a divisional sales manager of a rubber and plastics manufacturing company was last week elected a Member of Parliament

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EEC Plastics Federation

CO-ORDINATING COMMITTEE CREATED

A CO-ORDINATING committee of the plastics processing industries of the European Economic Community is to be established. Agreement to this effect was reached at a meeting in Paris on March 3 and 4 (*RJIP* March 5) of representatives of national plastics federations from France, Germany, Belgium, Italy and Holland.

It was decided at the meeting, which was called by the Comité National Intersyndical de la Transformation des Matières Plastiques, that the executive council of the committee should be comprised of the presidents of the various national bodies or groups, assisted by their secretaries or general managers.

The Co-ordinating Committee will deal with all questions of general interest to plastics processors in the Common Market, such as tariffs, international exhibitions, the collection and collation of statistics, etc. It will leave to the various groups (such as the study group of spreaders and calenderers of the EEC, already constituted) consideration and treatment of their own particular problems, but it is understood that when possible the committee will be informed as soon as such problems arise and before a decision is taken in regard to them.

Named as provisional president of the new committee is Mr Pennel, president of the French Comité Intersyndical. Mr Bartholoni, secretary of the same French committee, is provisionally named as secretary.

A meeting of secretaries and general managers of the various federations and groups will be held in Paris in April, and of presidents in Brussels in May.

Besides making decisions as to the structure and work of the new committee, the representatives took advantage of the occasion to study a variety of problems, considering these both in full session and *ad hoc* groups. It was deplored unanimously that specialist plastics industry exhibitions had multiplied chaotically, almost without reference to the industry. A rota scheme was decided upon for the next international exhibitions in EEC countries on the following basis: Holland, 1960; Belgium, 1961; France, 1962; Germany, 1963; Italy, 1964. Representatives of plastics machinery manufacturers were present at the meeting on the problem of exhibitions and it is understood that manufacturers of raw materials for the industry were also in agreement on this question.

Among other questions which were considered were the common customs tariffs of EEC countries; the temporary importation of moulds; the co-ordination of industry statistics; the standardization of technical terminology; legislation on toxicity of plastics, and the establishment of uniform descriptions for plastics articles in everyday use.

It is something of a feather in the cap of the Comité National Intersyndical de la Transformation des Matières Plastiques, which came into being only in July last, that it has so soon made such a positive contribution as to instigate the formation of the Co-ordinating Committee in Europe for the EEC plastics industry.

Epoxys at ASEE

Casting epoxy resins for manufacturing switchgear components and bushings, resins for impregnating and potting transformers of all sizes, and for glasscloth laminates, protective coatings, and adhesives, will be shown by CIBA at the electrical exhibition (ASEE), which opens at Earls Court on April 5.

One of the exhibits on display will be an X-ray tube anode, consisting of an Araldite insulator and support cast on to a central copper tube; it works under a hard vacuum at 50kV. Casting was carried out by McKinlay Electrical.

MALAYAN RUBBER EXCHANGE

The Malayan Government has announced plans for setting up a Rubber Marketing Exchange. A committee is now examining the matter, and a Government statement said it was fully satisfied that there was considerable support among all sections of the rubber trade for such an Exchange.

Rubber trade sources in Kuala Lumpur said on March 20 that there was a strong and growing feeling that Malaya's rubber should have an internationally-recognized outlet in Kuala Lumpur. Some rubber traders are reported as saying that the Government should back an Exchange by applying statutory obligations to the rules of contract governing the clearing house for Malayan rubber. The Singapore rubber market, through which Malayan rubber deals are largely carried out, has no statute to support it.

Traders added that they felt the Exchange would function like that in London where all transactions were completed centrally. The Exchange should have its headquarters located centrally in Kuala Lumpur.

Mr H. B. Hussey, a leading rubber trader in Malaya, said that it was a logical step for the Government to encourage the setting up of an Exchange in Kuala Lumpur. He said: 'The Exchange will be able to curb wild speculations in rubber detrimental to the economy of the country. It can demand deposits against rubber purchases and for proof of physical rubber. The Exchange can also see that packers conform to specifications.'

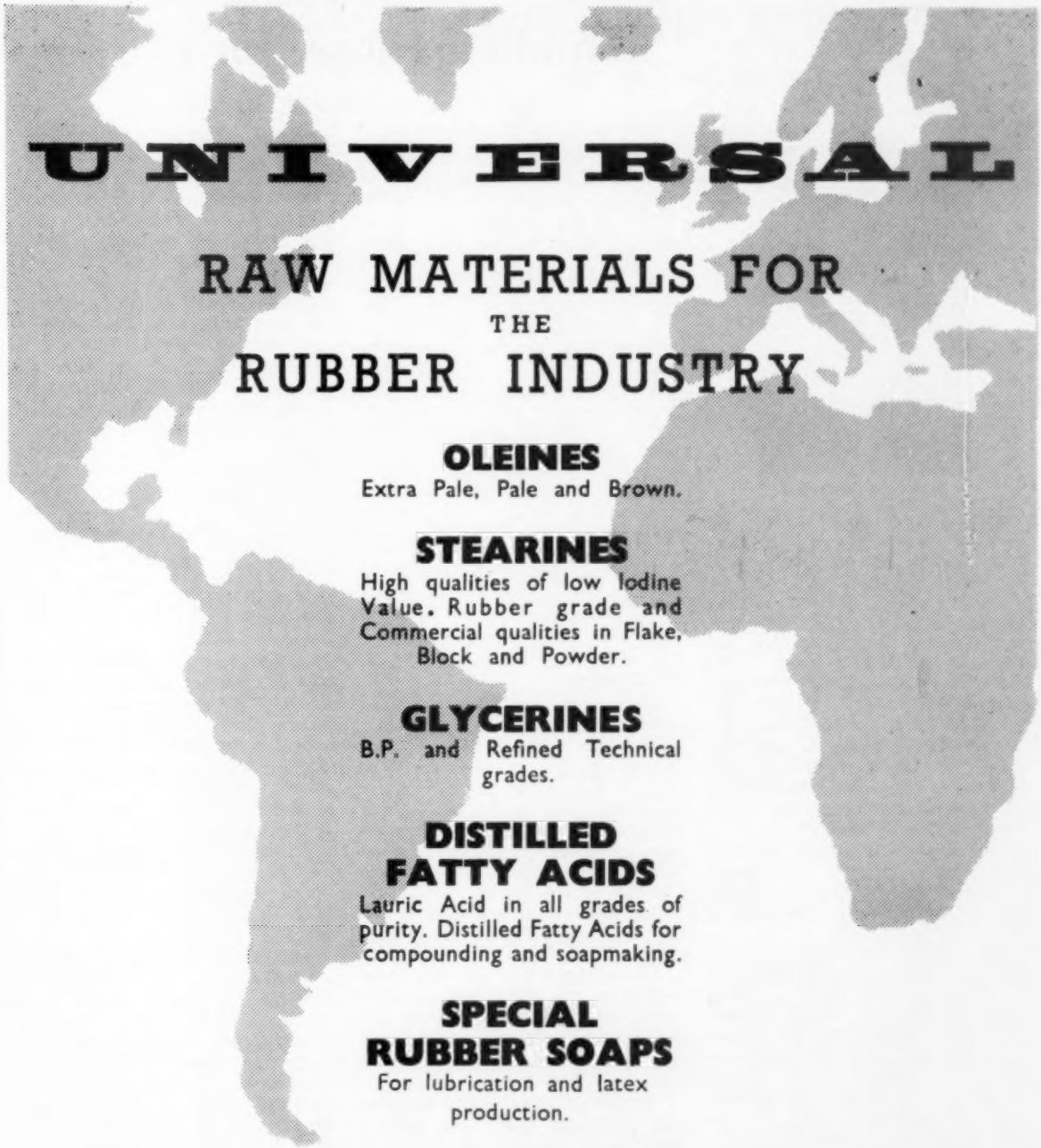
Danbritkem A/S

ICI TO MANUFACTURE POLYTHENE IN DENMARK

A JOINT company is to be formed in Denmark for the manufacture of polyolefines. At first I.C.I.'s 'Alkathene' will be made, using their high-pressure process. Partners in this new enterprise are I.C.I. Ltd. and A/S Dampskibsselskabet Svendborg and Dampskibsselskabet af 1912 A/S, owners of the Maersk Refinery, Copenhagen.

The new company, to be known as Danbritkem A/S, Copenhagen, will have a capital of some 80 million Danish kroner (approximately £4m.), provided equally by the Danish and British partners. UK exchange control permission has been sought. The polythene plant, to be built alongside the Maersk Refinery, will have a capacity of 15,000 tons a year. The undertaking, I.C.I. stated last week, will be a very important step in the development of plastics raw materials manufacture in the area.

I.C.I. already manufactures about 100,000 tons a year of polythene in the UK, and also produces through subsidiary companies in Canada, India and Australia. There are a number of other manufacturers throughout the world who are producing, or will produce, polythene under licence, but Danbritkem A/S is the first venture in which I.C.I. have undertaken joint manufacture of polythene in Europe.



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New BPF Chairman

At the annual general meeting of the British Plastics Federation in London on March 16, David Radford, Ekco Plastics Ltd., was elected chairman in succession to Mr N. B. Punfield (Punfield and Barstow Ltd.),

DAVID RADFORD

whose term of office expires. Mr Radford was previously vice-chairman and the new vice-chairman is Mr Finlay Walls, of I.C.I.

David Radford, the new chairman of the British Plastics Federation, was born in Burton-on-Trent and educated at the Grammar School there and Nottingham University College. He joined E. K. Cole Ltd. in 1943 after 18 years with the Nuffield Organization, was appointed general manager of the Ekco Plastics Division two years later, and became an executive director in 1951. Upon the formation of Ekco Plastics Ltd., an E. K. Cole subsidiary, in 1957, he became director and general manager of that company while retaining his executive directorship of the parent firm.

In 1958, as vice-chairman of the BPF, Mr Radford made history by travelling on the first scheduled Comet 4 flight to America to represent the British plastics industry at the annual conference of the Society of Plastics Federation Inc. at Chicago. A member of the Plastics Institute, he was formerly chairman of the BPF Publicity Committee.

Texstar Buy Air

The Texstar Corp., of San Antonio, Texas, has acquired Air Accessories, Inc., Fort Worth plastics manufacturers. With 1959 sales of $3 million, Air Accessories manufactures plastic panels and windows for all industry, 'bubbles' for the aviation industry and is said to be the world's largest producer of marine windshields. It also makes equipment for the electronics trade.

The firm will now operate as a subsidiary under the name 'Texstar Plastics.'

Boundless Future for Plastics

BPF ANNUAL GENERAL MEETING

'LOOKING ahead we can see no check to this annual advance in the plastics industry in the foreseeable future. I am quite sure that our industry will go on from strength to strength.'

So said Mr Norman B. Punfield, retiring chairman of the British Plastics Federation in his speech at the annual general meeting in London on March 16.

He opened by saying how much all present regretted that their president, Mr C. H. Glassey, was unable to be with them. The Board of Trade figures for 1959, he went on, showed that nett sales of plastics materials had reached 501,000 tons (details were reported in *RJIP*, March 12) over 20% higher than in 1958.

Mr Punfield said that although he was not prepared to predict by how much that figure would be exceeded in 1960, he would prophesy continued and very rapid expansion for reinforced plastics.

'I am convinced,' he said, 'that while the industry as a whole has a great future, this particular branch will go ahead at much greater speed than it has in the past. Injection moulding, with a number of new materials becoming increasingly available, seems almost certain to go ahead with ever-increasing momentum, and the same applies, although to a slightly lesser degree to compression moulding, which also showed expansion in 1959.

'As a further look into the future I think we can forecast with absolute safety the production of larger and larger injection mouldings for motor cars, refrigeration and other large consumers of thermo-plastics.'

Continuing, Mr Punfield said that the Federation had been actively engaged in the cut and thrust of detailed negotiations over European Free Trade following the breakdown of the negotiations for a total European Free Trade Area.

The Federation's activities had naturally been dominated by detailed negotiations on behalf of the plastics industry with the Outer Seven countries.

Whilst the Federation had supported the outlined proposals for a Free Trade Area of the Outer Seven, this was not so much for their intrinsic merits, but in the hope that the basic idea would offer a basis for subsequent arrangements with the common market to ensure free trade with the Continent of Europe as a whole.

Mr Punfield then mentioned that considerable time had been spent in considering the necessary steps to obtain, for the first time in their history, the facilities and services of a research association. He recorded in particular thanks to Mr Anderson, Mr Collinson and Mr Heath who, as a sub-committee, had discussed the problem with the Research Association of British Rubber Manufacturers. It was not yet possible to forecast the outcome of the negotiations but he was hopeful that some scheme of value to the industry would come out of them.

Concluding, Mr Punfield said that he would like to express his gratitude for the confidence and support of members during his two years as chairman. During that time he had met with nothing but friendship. They were two years he would remember always with pride and pleasure.

At a meeting of the Council of the British Plastics Federation after the AGM on March 16, officers and members of Council for the year 1960-1961 were elected as follows:

President, C. H. Glassey. *Chairman*, D. Radford. *Vice-Chairman*, F. Walls. *Immediate Past Chairman*, N. B. Punfield. *Hon. Treasurer*, R. P. Anderson.

Members of the Council are now as follows: G. S. Bache (Beck, Koller), S. R. Badley (British Resin Products), D. H. Balfrey (Industrial Mouldings), S. Baxter (Tool 'B.B.' Co.), H. D. Brett (Vinyl Products), N. Browne (Bone Brothers), E. A. Davis (Formica), K. Dodd (United Ebonite), C. M. Edwards (BX Plastics), J. L. Fergus (Telegraph Construction), A. Gundry (Kent Mouldings), A. W. Hall (Bakelite), T. Harland (Streetly Mfg. Co.), H. F. W. Head (Insulators), A. A. Heath (Permali), S. Holmes (Turner Bros.), S. Hope (Commercial Plastics), R. W. Lowe (Chas. Lowe and Co.), R. E. McOnie (Shell), C. J. F. Mitchell (Wallington Weston), D. G. Owen (I.C.I.), B. S. Parkyn (Scott Bader), J. A. Pentecost (Boake, Roberts), E. J. P. Reynolds (Tufnol), G. G. Ritchie (Injection Moulders), P. Russell (B.I.P.), A. B. Scotson (G.E.C.), P. Smith (Bakelite), C. R. Todd (Birkbys), A. L. Tompsett (I.C.I.),

J. S. Walker (Fraser and Glass), M. B. Warbreck - Howell (British Celanese), H. White (James North), R. H. Wilby (Wiggins, Teape), C. G. Wilde (Micanite and Insulators), A. Williams (Flexo Plywood), A. W. Wilson (Bristol Aerojet). Past chairmen—*Ex-Officio:* P. A. Delafield (British Resin Products), H. W. Graesser-Thomas (Yorkshire Tar Distillers), C. C. Last (Bakelite), H. V. Potter (Bakelite), A. E. Skan (Tufnol), W. Chas. Waghorne (Insulators). Co-opted: H. A. Collinson (Leicester Lovell), C. S. Dingley (B.I.P.).

The Publicity Committee for 1960-1961 is composed as follows:

Chairman, S. R. Badley (British Resin Products), R. Buckley (Kent Mouldings), J. N. Gibson (Monsanto Chemicals), S. Gorden (R. H. Windsor), G. C. Graver (British Geon), J. Parry Green (Fibreglass), E. W. A. Jefferies (Bakelite), P. I. Smith (Imperial Chemical Industries), R. MacDonald Watson (BX Plastics), D. Wolfers (Shell Chemical Co.). *Ex-Officio:* Chairman, Vice-Chairman and Immediate Past Chairman of the Federation.

The Board of Trade are considering an application for the imposition of an anti-dumping duty on Ethanediol (Mono-ethylene Glycol) imported from the US. Details can be obtained from the Tariff Division before April 8.

Polymer (UK) Ltd. has changed its telephone number to Mincing Lane 1521.

Shell Synthetic Rubber

NEW PRODUCTION IN UK

A MAJOR investment in the UK in the field of synthetic rubbers was announced this week by the Shell Chemical Co.

Work is to be put in hand immediately to establish substantial capacity at Carrington for the manufacture of the new polydiene rubbers. These will be representative types of polybutadiene and polyisoprene, the latter being already manufactured on a commercial scale by Shell Chemical Co. Division of Shell Oil Co. in the USA. The processes to be used in the manufacture of these new rubbers are the outcome of intensive research and development in this field carried out in the laboratories of the Royal Dutch Shell group of companies.

Comparable Performance

Active development of other novel types of synthetic rubber is being undertaken at the same time. For many end uses, these new rubbers are comparable in performance to top-grade natural rubber and in some respects, such as abrasion resistance and heat build up are superior. Limited supplies for evaluation by the industry will shortly be made available. A parallel announcement regarding a similar project in Holland is being made by Shell Nederland N.V.

It is understood that the synthetic rubbers will be for export as well as for the home market. The Carrington plant can supply the raw materials, butadiene and isoprene, but it is not known whether this will be the case, or whether supplies will come from other sources. It is anticipated that the plant will come on stream in two to three years time.

IRI SOUTH AFRICA

At a meeting of the South African Council of the Institution held in Durban in February the following elections were confirmed. Council: Chairman, H. B. De Lange; vice-chairman, H. V. Cheetham; hon. secretary/treasurer, F. C. Moore, A.I.R.I.; assistant secretary/treasurer, J. G. Cox; B. Beck; G. C. Lockwood; G. Yates.

H. V. Cheetham was elected chairman of the Natal branch committee, and G. Yates chairman of the Transvaal branch committee.

A short evening course of 10 lectures will be given on a local basis in both Johannesburg and Durban; the first lecture in each case will be held in April. The annual general meeting and dinner will be held in Durban on April 11.

British Hydrocarbon Expansion

£5m. PLAN AT GRANGEMOUTH

THREE major new plants are to be built at the £30m. Grangemouth works of British Hydrocarbon Chemicals Ltd. £5m. will be spent on the new facilities, which are expected to be completed in 1961.

One plant will produce ethylene dichloride, and the second methanol. The third, a butadiene plant, will more than double existing production of butadiene, it is said. These raw materials will be sold without further processing, but it is understood that the Distillers group will absorb some of the output.

This development means that a bigger use will be made of the third cracker at Grangemouth when it comes into operation in about June this year. As announced earlier, this cracker—which is fed from the nearby British Petroleum refinery—will have a production capacity of 70,000 tons of ethylene a year. It is the biggest cracker of its kind outside America.

A hundred more employees will be taken on at the new plants, which will bring the total number of people employed at Grangemouth up to about 1,800.

Shell Chemical Co. Ltd. announce that Mr R. N. Wheeler has recently been appointed to the staff of Egham Technical Service Laboratories. Among his duties he will be particularly responsible for technical liaison with Government departments and official bodies regarding products handled by the Industrial Chemicals Division of the Company.

A 12-stone man can stand on this polythene liquid container without bursting it or forc'ng the stopper out. Made by Lacrinoid Ltd., who say that the patented closure has made it possible to blow-mould it with a wall-thickness and weight reduced to such an extent that the cost is brought down to that of a disposable pack. The closure has been approved by the GPO

Research Report

Second of a series of articles published from time to time on the work of organizations carrying on research for the rubber and plastics industries

Plastics Research Institute TNO at Delft

By IR F. W. R. WIJBRANS

THE Plastics Research Institute TNO—the first in the post-war world—was established in a period (1946) when Holland was facing the apparently insuperable problem of reactivating her economy, which had suffered severely from World War II. A committee was appointed by the Netherlands Minister of Economic Affairs to report on the possibilities of restoring vitality to the plastics industry. In its final reports, in which directives had been given for the creation or development of plastic production or processing plants, the opinion was given that a research institute should be established, for the benefit of the plastics industry. The view was expressed that such a Plastics Research Institute (PRI) should belong to the TNO Organization for Industrial Research.

This organization is one of the pillars on which the Central Organization for Applied Scientific Research (Toegepast Natuurwetenschappelijk Onderzoek) is founded. This central organization, although created as early as May 1 1932, could be fully expanded only after World War II. The basic task of TNO is best characterized by quoting the pertinent section of the Act of October 30 1930, on the regulation of applied scientific research in the Netherlands, under which TNO was founded. This section reads: 'There shall be a central organization for applied scientific research, the aims of which will be to ensure that such research is put at the service of the community in the most efficient manner possible.'

To carry out this task adequately, the various fields of work covered by TNO were appropriately allocated. For each of these fields separate organizations were created to deal with specific parts of the task orginally entrusted to TNO. Thus TNO-Organizations arose dealing with agricultural science, public health, defence and industry. The TNO component for industry was styled 'Organization for Industrial Research.' The PRI TNO was thus linked-up with similar institutes performing analogous work for other branches of industry.

Dr R. TUNTELER

Ir F. W. R. WIJBRANS

Explosive Growth

The remarkable thing is that in 1946 a PRI already existed: that of the Rubber Foundation. Created to serve as a camouflage vis-à-vis the occupying forces, by which some Dutchmen remained safeguarded from deportation, it had done its duty by 1946. As the Rubber Foundation then turned to its actual task again there was no objection to creating a TNO institute; on the contrary co-operation was given.

Three factors—a positive advice by the quoted Committee of Plastics, the existence of a research organization, and the existence of something that looked like a PRI—promoted the happy birth of this TNO institute. Its explosive growth, however, is due —apart from the goodwill of the industry—to the inspiring work of its first director, Mr L. C. Stoutjesdijk. When Mr Stoutjesdijk was appointed to be Delegate of the Chairman of the Industrial Organization TNO in 1956, his place at the PRI was taken by Dr R. Tunteler (director), and Ir F. W. R. Wijbrans (deputy director).

The actual status of the Delft PRI can best be summed up by saying that it is an institute which is part of a research organization enjoying government subsidies. The government, convinced of the importance of research for the nation's prosperity, are prepared to contribute their share, on the understanding that industry should avail itself of opportunities offered to have research work carried out. This expectation has been fulfilled. TNO also contains institutes which receive subsidies from various industries in addition to those from the government. The PRI has, however, endeavoured to minimize the latter source of income, acting on the principle that, whenever appropriate, payments for work performed are preferable to any subsidies. The ideal ratio between government contribu-

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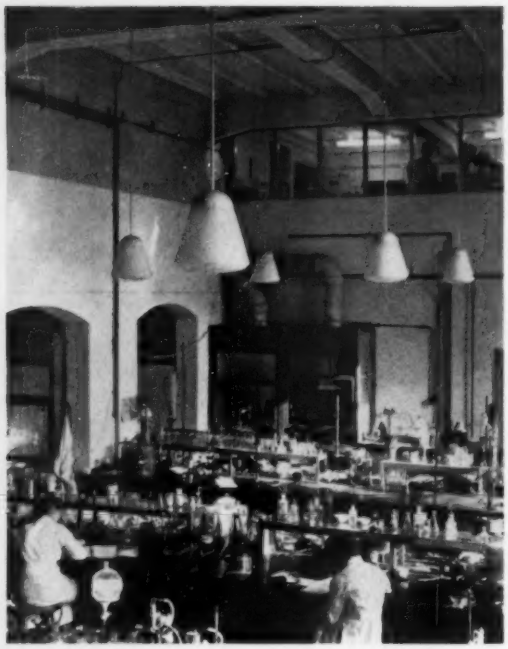


One of the well-equipped laboratories in the chemical department

tions on the one hand, and payments for sponsored research projects on the other, may be different for different institutes. From 12 years' experience with the PRI, I hold that, for this particular institute at least, the most efficient ratio is around 2:3.

Basic Ideas

From the start, a number of basic ideas on how PRI should be built up were laid down. They were:

a. The Institute should dispose of adequate means to enable its growth to a national centre for plastics research as far as research on chemical, physical and technological problems are concerned.

b. In addition to research work on orders given to it, the institute should carry out free fundamental research, whose results should be made generally available.

c. Essentially sponsored research and free research should be performed in separate departments—this avoids the risk of free research being crowded out by sponsored research.

d. The institute should have a large number of specialists, as soon as possible.

e. Apart from being a research centre proper, the institute should be a source of information to trade, industry, governmental and other authorities.

f. Its research workers should be disturbed as little as possible by visitors and correspondence on problems of a general nature.

These aims have been realized now, as much as possible. A number of departments were created which for reasons of internal organization were later subdivided.

Scientific Department

In the first place, a scientific department was established which was assigned the task of fundamental research in the free sector. It could therefore also work on the training of specialists. Industrial orders were carried out in this department. But as soon as they threatened to become too extensive they were referred to the industrial department and, as and when required, the specialists concerned were switched over too. This department thus did only a small amount of sponsored research; its significance lay mainly in that it soon became a stimulant, not only to work carried out elsewhere in the institute but also in the Netherlands plastics industry.

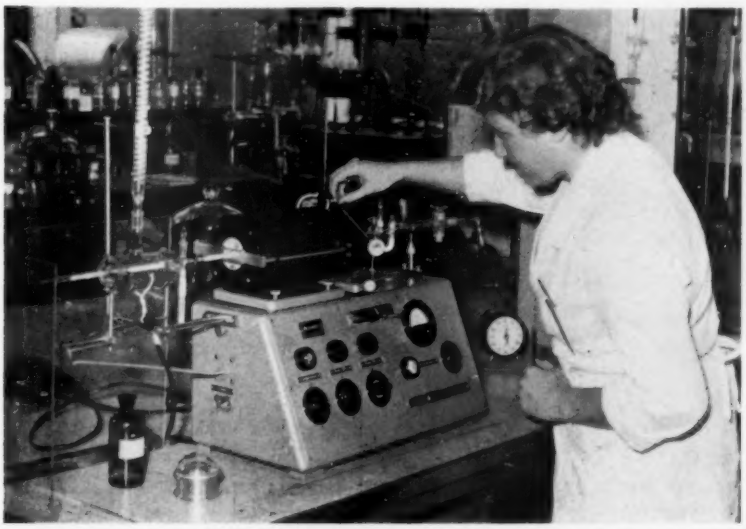
The Scientific Department originated research on starch, a potentially important raw material for industrial applications. This research has led to the founding of a factory for separation products of potato-starch. Research on semi-permeable membranes also gave remarkable results. An electro-dialytical desalting process based on them was developed which aroused interest inside and outside the country.

Polymethyl-methacrylates were the starting point for an extensive study of the relation between the chemical structure and physical properties of macromolecular compounds. Methods were developed for determining the characteristic mechanical properties of the substances, employing i.a. damping measurements in a wide frequency range. Proteins, thermosetting plastics and polyamides were also investigated, and, in the field of physical-chemistry, osmometrical, viscometrical and turbidimetrical methods of measurements were perfected.

The division between basic and industrial research, which naturally could not be kept to consistently—since industrial research may be of a basic type and vice versa—was appreciated by the board of TNO. This resulted in the creation of the Central Laboratory TNO in 1954, accom-

The reinforced plastics department designs prototypes like this for industry, from polyester glass fibre

modating the scientific department of the PRI, together with other departments. In its new shape, this central laboratory has been given a wider field of work, so that it deals not only with the chemistry and physics of macromolecular compounds, but also with biochemical, biological and inorganic problems. The present central laboratory contributes to the scientific background of all the institutes of the Organization for Industrial Research TNO.



An assistant in the analytical department determines the oxygen content of an organic material

Industrial Research Department

This was created with a view to sponsored research. Later on it was subdivided into a chemical department, a processing department and a department for reinforced plastics.

The chemical department occupies a spacious laboratory, where several groups headed by university-trained workers handle chemical aspects of industrial research. A small amount of work is also done on projects financed with government moneys. These deal with items of a general character, or items which can be of interest to industry only when positive results have been obtained.

In this department, a process was worked out for the production of an unsaturated polyester resin from easily obtainable starting materials; its quality was not lower than that of other resins so far known. When working on telemerization, a process was found which yielded a starting material for the perfume industry. Research on the possibilities offered by alfincatalysts for use in polymerization processes is in progress.

In the processing department, various problems of design and moulding are handled. This department is of ever-increasing importance, because of the present tendency to study processing problems on a scientific basis. It has a well-equipped Pilot Plant Department, in which a complete set of processing machines are in operation. In addition to a calender, injecting machines are available, as well as extruders, moulding presses, a transfer-press and a plate-press. One of the finest machines is a spinner as suitable for coagulation-spinning as it is for melt-spinning and dry-spinning.

Due to problems of accommodation, the Reinforced Plastics Department had to be branched off from the Processing Department; it is now housed in one of Delft's historical buildings. Young as it is, this department has shown its mettle already. Here prototypes of glass fibre polyester mouldings are produced to determine whether their industrial scale production is feasible. For this the department possesses a preforming machine and a press. Experience is also gained about the hand-lay up method. The department boasts some designs of its own, such as a lifeboat, a cable drum, radar structure and a pilot's cutter.

Testing Department

This contributes considerably to the handling of research projects, as well as to the work carried out by the Chemical Department, and particularly to that of the Processing Department. Only after testing can one be sure that chemical compositions or processing conditions are such that optimum quality has been achieved. Apart from internal orders, the department acts as a neutral testing laboratory for industry. The time spent on free research is, to a large extent, utilized on work which is directly or indirectly connected with standardization. From time to time it is necessary to work out new methods of testing as has been done, for example, with foam plastics and plastic tubes.

Analytical Department

This was originally created to assist the Chemical Research Department. It has become a separate department, but the bulk of its work still consists of assisting the research groups. It has been expanded into a properly equipped organic analytical laboratory, specializing in macro-molecular chemistry. The experience acquired in this field has been laid down in a number of specifications for analytical work, which are available to any interested parties.

Information and Documentation

This department's major assignment is to supply advice and information to commerce and industry. Last year's total of approximately 6,000 requests for advice and information shows that it caters for a real need. PRI's library, documentation section and abstracting service are located here, and '*Plastica*,' a monthly in Dutch with English summaries, is produced by the department, which also keeps the institute's large collection of samples.

Staff and Personnel

The Technical Service, with a precision mechanical workshop, and a section for glass-blowing, an administration section and a central depot, complete the picture of a set-up which for all practical purposes has lived up to expectations.

At present the institute, with a staff of 180 and an annual budget of about 1.8 million guilders, cannot adequately deal with all requests for research. One of the principal factors which prevent further expansion is lack of accommodation, but even if this problem is solved, the question whether an expansion of PRI TNO is justifiable, still remains.

By all the present signs, this tedious point will be settled through intensifying collaboration between the various TNO Institutes in the chemical field. Thus any ups and downs in the actual need of research work, which can now be observed at the individual institutes, could be efficaciously levelled with the aid of proper channelling of activities through a larger total of capacity and manpower. In that case, the possibility of accepting more orders—including orders from abroad—would certainly increase.

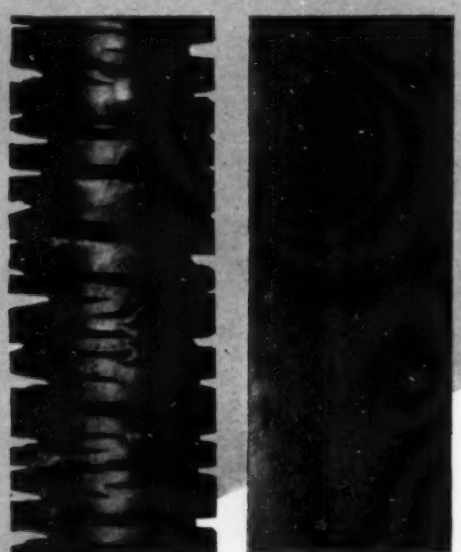
how to vastly increase the useful life of rubber...

Effect of Curing System on Antiozonant Retention in SBR Stocks after Vulcanization

(All contain 3.0 phr UOP 88; 40.0 phr HAF black)

Compound	Accelerator	Sulfur, phr	% Extractable Antiozonant
1082....	2.0 phr benzothiazyl disulfide	2.0	66.4
1083....	1.0 phr benzothiazyl disulfide	2.0	79.6
1087....	None	2.0	~100.0
1088....	1.0 phr benzothiazyl disulfide	3.0	74.6
1083....	1.0 phr benzothiazyl disulfide	2.0	79.6
1089....	1.0 phr benzothiazyl disulfide	1.0	88.6
1083....	1.0 phr benzothiazyl disulfide	2.0	79.6
1084....	1.0 phr N-cyclohexyl-2-benzothiazole sulfenamide	—	—
1003....	1.0 phr diphenylguanidine	2.0	~18.0
1085....	2.0 phr tetramethylthiuram disulfide	—	35.0
1090....	4.0 phr tetramethylthiuram disulfide	—	12.9

The SBR specimens below were exposed to ozone at 100°F with 20 percent elongation for 52 hr. at 33 pphm ozone, then 167 hr. at 63 pphm ozone.



Carbon black—HAF (high abrasion furnace), Curing system—4 phr tetramethylthiuram disulfide; Hours to first crack—7 to 23.

Carbon black—HAF (high abrasion furnace), Curing system—2 phr sulfur, 1 phr N-cyclohexyl-2-benzothiazole sulfenamide. No cracks in 239 hr.

CONSIDER THE EFFECT OF YOUR CURING SYSTEM ON THE EFFECTIVENESS OF A CHEMICAL ANTIOZONANT

In compounding rubber, there are several things which are important in assuring maximum crack-free life. First, you must use a potent antiozonant like UOP 88 or 288. Next, consider what a vast difference in effectiveness can be realized by your *curing system.*

The right antiozonant used in correct proportion is of primary importance. Then, by using the proper accelerator, you can promote its maximum effectiveness, and thus contribute to maximum ozone protection.

Look at the two rubber test strips illustrated. Both were formulated with UOP 88 . . . but note how much more effectively the antiozonant worked when accompanied by this change in curing systems—a vast increase in resistance to cracking. The table above the test strips shows how the *proper* accelerator aids antiozonant effectiveness.

Help in achieving maximum effectiveness from UOP 88 or 288 antiozonants in your rubber formulations is available through UOP facilities and technical personnel. Just write or telephone our Products Department.

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VIEWS *and* REVIEWS

COMMENT ON SCIENTIFIC AND INDUSTRIAL MATTERS

by **Dr Schidrowitz**

PA 80: A New Variety of SP Rubber

AN interesting development in SP (Superior Processing) rubber is the introduction of a new variety termed PA 80 (PA stands for *Processing Aid*). One of the principal articles in the *Planters' Bulletin*, No. 47, March 1960, relates to this new variety of SP rubber.

Introduction

In the introductory remarks, the circumstances which led to the development of PA 80 are explained as follows:

'SP rubbers were first made available in premium grades as crepe, smoked sheet and air dried sheet. Although the technical advantages of these SP rubbers have been clearly demonstrated, the economic return obtainable by their use is not always sufficient to compensate for additional costs when SP rubbers replace lower grades. Their use has consequently been mainly confined to first quality goods for which high-grade rubbers must be employed.

'The introduction of SP brown crepe early in 1959 provided the user with a lower grade of rubber with SP properties but its usefulness is limited to the manufacture of articles which can be made from brown crepe alone. It would be very difficult to introduce SP properties into many of the lower-grade rubbers and we have sought instead to develop an SP masterbatch which the user can incorporate, to suit his own requirements, with any grade or mixture of grades of rubber, whether natural or synthetic.

'We have now succeeded in preparing a suitable masterbatch called Processing Aid 80, or PA 80. It is essentially an intimate mixture of 80% *vulcanized rubber and* 20% *unvulcanized rubber* and is a close relation of the present family of superior processing rubbers.'

The article then proceeds to describe the method of preparing PA 80 on a rubber estate. Stated briefly, the method consists *in making vulcanized latex and mixing this latex with uncured latex in the proportion of four parts of vulcanized latex to one part of uncured latex.* The mixture is coagulated with sulphuric acid and the coagulum milled twice between lightly grooved rolls to form a crumb which is then dried. The dried crumb is pressed until it forms a coherent block which is then wrapped in polythene film and placed in a multiwall paper bag for shipment. For full details of the process, I must refer readers to the article in the *Planters' Bulletin.*

Production

In the latter half of 1959, about three tons of PA 80 were despatched from the RRI Malaya Experiment Station to the UK, the USA, Japan, Australia, New Zealand and South Africa, for evaluation by rubber manufacturers, and the article states that 'it is already evident that a steady demand is likely to develop.'

The article concludes with the remarks: 'We believe that the introduction of PA 80 will enable SP properties to be incorporated into a much wider range of manufactured goods and we have every confidence that the ultimate demand for SP rubbers will considerably exceed the present output.'

Ribonucleoprotein Component of Hevea Latex

British Rubber Producers' Research Association Publication No. 331 is entitled 'Nucleotides of *Hevea brasiliensis* Latex: A Ribonucleoprotein Component.' The author is A. I. McMullen and the paper originally appeared in *The Biochemical Journal*, Vol. 72, No. 4, pages 545-549, 1959.

In the introduction, the author states that by means of high-speed centrifuging, latex can be separated into three fractions. The rubber particles form the uppermost layer, the 'bottom fraction' consists of sedimented material, while the intermediate layer, termed 'C-serum,' represents the aqueous phase. The present work describes the isolation and characterization of a nucleic acid which is present as a ribonucleoprotein in C-serum and the bottom fraction. The latex was collected and centrifuged in Malaya, and the C-serum and bottom fraction freeze-dried. The freeze-dried materials were sealed under high vacuum and despatched to the BRPRA laboratories at Welwyn Garden City, where they were stored at −25°C. until required.

Results

The author summarizes the results of the investigation as follows:

1. 'The isolation and characterization of a purified ribonucleoprotein component of *Hevea* rubber latex is described.'
2. 'A method of final purification employing a cationic detergent has been developed which gives a product of approximately 70% nucleic acid content.'
3. 'The composition of the polynucleotide portion of the purified product is similar to that of several other plant nucleic acids so far reported in cytoplasm.'
4. 'The molecular weight of the product is approximately 40,000; the protein part of the molecule has a maximum molecular weight of 13,000.'
5. 'The ratio of the number of amino acid residues to the number of nucleotide residues in the purified nucleoprotein is discussed.'

PHILIP SCHIDROWITZ

MEN and MATTERS

A Review of People and Events

by George A. Greenwood

THERE will be many congratulations, in which I join, for Mr David Radford, of Ekco Plastics Ltd., who at the annual meeting of the British Plastics Federation in London on Wednesday of last week was elected chairman in succession to Mr N. B. Punfield, of Punfield and Barstow Ltd. Mr Radford is no stranger to the Federation. He steps up from the office of vice-chairman, in which he is succeeded by Mr Finlay Walls, of I.C.I. Mr Charles H. Glassey, of course, remains president.

Mr Radford comes from the North Midlands, and was educated at Burton-on-Trent Grammar School there, and at Nottingham University College. After being for 18 years connected with the Nuffield Organization, he joined E. K. Cole Ltd. in 1943 and was appointed general manager of the EKCO Plastics Division two years later. In 1951 he became an executive director, and in 1957, upon the formation of Ekco Plastics Ltd. (an E. K. Cole subsidiary), he became its director and general manager, while retaining his executive directorship of the parent firm.

In 1958, as vice-chairman of the British Plastics Federation, Mr Radford made history by travelling on the first scheduled Comet 4 flight to America, when, as I stated at the time, he flew to represent the British plastics industry at the annual conference of the Society of Plastics Federation Inc. at Chicago. He is a member of the Plastics Institute and a former chairman of the British Plastics Federation Publicity Committee.

More Honours

Birmingham University is to hold Degree Congregations on July 15 and 16, when the Senate will confer seven honorary titles upon men and a woman, famous in the sciences and the arts. One of them is an old friend of many of us who like two or three of his confreres has special associations with the University. He is Sir Harry Melville, secretary to the Committee of the Privy Council for Scientific and Industrial Research who, is, of course, a former Mason Professor of Chemistry. Another to be honoured is Sir Gordon Russell, Director of the Council of Industrial Design, who has, in the course of his career, had such a lot to do with the application of beauty and line in the rubber and plastics manufacturing industries.

One thing about Sir Harry which few people know, or tend to forget, is that he is probably one of the youngest men ever to become a Fellow of the Royal Society. He was elected in 1941, when he was only 33.

Sir Gordon is something of an outstanding personality in this matter of Honours for he was either an original holder of the R.D.I. (that is Royal Designer for Industry of the Royal Society of Arts) or one of the earliest recipients.

There is the ring of topicality about the fact that the Messel gold medal, the senior award of the Society of Chemical Industry, is to be presented to the medallist for 1960, Viscount Chandos during the annual meeting of the Society at Bristol on July 6. This award was created by or in the name of one of the ancestral collaterals of Mr Anthony Armstrong-Jones, Rudolph Messel, who was president of the Society in 1911-12, and again in 1914.

Industrial Art Bursaries

My reference above to Sir Gordon Russell and the Royal Society of Arts reminds me that I have just had the Report for 1959 on the Industrial Arts Bursaries Competition, and most interesting it is. In the long list of awards are the following: Acrylic Sheet ('Perspex'). Bursary (£150): Brian Coysten (LCC Central School of Arts and Crafts, age 20), Commended: Richard Cuttriss (Royal College of Art, age 25) and Michael Durrant (LCC Central School of Arts and Crafts, age 19). Laminated Plastics: Bursary (£150): Margaret Hall (Royal College of Art, age 23), Commended: Barbara Austrin (South East Essex Technical College and School of Art, age 20), Louie Moore (Bradford Regional College of Art, age 20), Bernadette O'Donnell (Bradford Regional College of Art, age 20), Bruce Rowling (Kingston-upon-Thames School of Art, age 19) and Jane Stewart (Winchester School of Arts and Crafts, age 21).

In the case of Brian Coysten, he was also awarded the Associate Membership of the Society—no small distinction for a young man of 20. He was highly praised for his work by the Jury of which the chairman was the Hon. G. C. H. Chubb. On general lines the Jury said that the quality of the work in the Acrylic Sheet section was much higher than in the last competition. It had high praise also, for the work of Miss Hall in the Laminated Plastics section saying that it stood well out from the rest of the field. It should, they added, be recommended both for the bursary in this section and the possible award of the Whiley Bursary. 'In particular' the award added 'the Jury appreciated her awareness of the curving nature of laminated plastics.' The chairman of the Jury in this section, by the way, was Sir Griffith Williams, K.B.E., C.B.

Smoke Rings

Not the long and short of it, but the big and small of it. Hycar nitrile rubber, which is used for huge seals and gaskets by the petroleum industry, is now being used for tiny 'O' ring seals in cigarette holders. The seals, I am told, prevent the escape of tars and nicotine and force them into the holder's filter where they can be trapped. Previously, much of the tar and nicotine escaped from the opening between a holder's plastic mouthpiece and the metal cigarette filter holder and could be inhaled.

Mr F. R. Thorpe

Mr F. R. Thorpe, Assistant General Sales Manager, of the Rubber Regenerating Co. Ltd., died suddenly on March 11.

Mr Thorpe served with the company in varying capacities over a period of thirty years, and he will certainly be sadly missed by his colleagues, and his many friends in the rubber industry, at home and overseas.

News from Ohio

My correspondence from across the water grows. I wish some of my British friends were as active and alert as those in the USA! For example, there comes from Akron,

Ohio, news of a magic door of magnetic force which, regardless of the human mind—so apt to forget—closes itself. According to Weather-Seal Inc., the new door features a unique Koroseal vinyl magnetic strip introduced recently by B. F. Goodrich Industrial Products Co., a division of the B. F. Goodrich Co.

The flexible magnet is widely used as an air-tight seal for refrigerators and freezers but the aluminium door application is the first use of the material in the home improvement or construction field.

A New Leaf

Recently I had something to say about Mr A. J. (Jack) Page, the well-known rubber and plastics executive who is the new Member of Parliament for Harrow West. Mr Page, I am now told, has a traditional connexion with politics for his father, the late Sir Arthur Page, K.C., although a member of the Bar who became Chief Justice of Burma, was prominent in affairs half a century ago. He fought unsuccessfully the Derby Division in 1910 against the redoubtable Rt. Hon. J. H. (Jimmy) Thomas, the railwaymen's leader. Mr Page's mother, Lady Page, who flew back from a visit to Nairobi, especially to help her son in his contest, is one of the few women I know of who holds the Kaisar-i-Hind gold medal, awarded her in 1935.

Dr Friedrich Zobel

News has reached me, and better late than never, of an event on March 16. This was the 60th birthday of Dr Friedrich Zobel, who is a member of the Board of Chemische Werke Hüls AG. His career has been a notable one. He decided to become a chemist while still at school and since then chemistry, music and sport, his three interests have filled his life. He became a chemist and, thanks to his diligence, his critical understanding and his energy, has since earned himself a notable place in the German heavy chemical industry, and an international reputation.

He has done a great deal of work on synthetic rubbers and it was largely under his leadership that Chemische Werke Hüls, during the time when the manufacture of synthetic rubber in Germany was forbidden, developed a great number of new products, which today total more than 540.

Obituary

An outstanding veteran of the chemical industry allied to rubber and plastics died last Thursday at Torquay: Mr E. J. Boake, of Doyley Manor, Hurstbourne Tarrant, near Andover. He was 92 and had been connected for at least 66 years with A. Boake Roberts. I suppose this company, now linked with Albright and Wilson, goes back to the days when chemicals and rubber were beginning to be allied, and quite a long time before the manufacture of plastics in the modern form had been evolved.

Mr Boake had seen over 70 years of active connexion with chemicals, an incredible change in the application of his company's products to various forms of industry, as well as an extensive growth in the company with which he was so long associated, so that a year ago its assets attributable to its equity holders were valued at £2,456,149. Mr Boake was probably as much a scientist as an industrialist, and he took considerable interest in the affairs of the Society of Chemical Industry and the Association of British Chemical Manufacturers. An interesting point is that his career almost parallelled that of Mr William Arthur Albright, who joined the firm of Albright and Wilson in 1876.

American Tour

I hear that Mr Kenneth D. Foster, M.B.E., chairman and managing director of Foster Brothers Ltd., Wednesbury, and chairman of Foster Brothers (London) Ltd., has recently returned from a business tour of the USA and Canada where he visited a number of large companies interested in operating the 'Bulldog' patented process for flanging polythene pipe.

Question Corner—110

(Second Series)

435. Give some account of the manufacture and properties of polyvinyl alcohol fibres.

(Answer next week)

Answer to Question Corner—109

434. Urea moulding powders are available for a number of purposes and usually contain alpha-cellulose as the main filler, particularly when translucent and semi-translucent colours are required. Opaque colours are also produced with this filler. Special powders of this type will produce imitation horn and imitation tortoise shell.

Types are available for mouldings where good dimensional stability is essential, or where heavy metal inserts are incorporated in the moulding, and also for flat and deep draw articles such as radio cabinets, toilet seats, etc. They are also applicable for the production of ceiling light fittings.

Wood filled urea moulding compounds are only available in a range of opaque colours and are used for electrical accessories, vacuum flasks, toys, closures, etc.

The most important characteristics of mouldings made from urea formaldehyde moulding powders are:

1. Odourless, tasteless and non-flammable.
2. Hard, good tensile strength and abrasion resistance.
3. Non-corrosive, inert; do not soften when exposed to heat.
4. Resistant to oils, greases, some weak acids and alkalis, and various solvents.
5. High dielectric strength and surface resistivity.
6. High resistance to tracking.
7. Wide range of colours available with good colour retention under exposure to heat and ultra-violet light.

(Another question next week)

'Off register? That's the sick list, of course'

1 car to every 3 homes

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	Total %	AB %	C %	DE %
Composition of London Independent Television Homes by Social Class.	100	11	26	63
Homes with Cars	38	52	50	27
New Cars	35	62	31	17
Used Cars	65	38	69	83
	100	100	100	100
Owned Car less than 1 year	34	27	32	39
Owned Car 1 to 3 years	47	47	51	46
Owned Car 4 years and over	19	26	17	15
	100	100	100	100

* *Figures are taken from London Viewership Survey No. 1 commissioned by Associated-Rediffusion from The Pulse Ltd.*

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Compounding for Oil Resistance

As part of the series on compounding problems at the National College of Rubber Technology, Mr H. W. Dauncey, Joseph Lucas Ltd., lectured on 'Compounding for oil-resistance at low temperatures.' Aircraft manufacturers, he said, were now asking for oil resistant components for service from +300°C down to below −60°C and this had put the rubber technologist on his mettle. In distinguishing between failures at high and low temperatures, the former usually occurred on account of chemical (oxidative or other) changes in the polymer whereas the latter were temporary physical changes involving factors such as brittleness and loss of flexibility.

The lecturer then outlined the swelling of non-resistant rubbers in oils and from this led on to the limited swelling observed with oil-resistant types. He drew attention to the dangers of short period tests in assessing service life and preferred the expedients of accelerating the tests by conducting them at higher-than-service temperatures or by increasing the aromaticity of the (hydrocarbon) test fluid. Low temperature behaviour could be assessed by brittle point measurements, by measuring the increase of torsion modulus with fall in temperature, or by measuring hardness at the low temperatures.

In dealing with the effects of compounding, fillers and degree of cure were said to have marginal effects, the principal determinants being the polymer and plasticizer.

The following data were presented:

TABLE I

Polymer	*Freeze Temp. C*	*Resistant to*
NR	−55	Alcohols; Ketones; glycols; vegetable oils; silicone oils
SBR	−50	
IIR	−50	Vegetable oils; esters
CR (GN)	−33	Mineral and vegetable oils; petrols; some esters
NBR (low CN)	−33	
,, (medium CN)	−22	
,, (high CN)	−11	
Thiokol F.A.	−50	Most oils and fuels
Methyl silicone	−65	Some esters; silicone oils; Moderate to mineral and vegetable oils
Phenyl silicone	−80	
Fluoro silicone (LS53)	−68	Most oils and fuels; some esters
Polyurethane	−40	Most oils and fuels
Viton A	(T_{10} −15	Most oils and fuels; esters except Skydrol 500

It was usual to choose the polymer for its resistance to those oils which would be met with in service and then to compound that polymer for optimum low temperature performance. The effect of increasing nitrile content of NBR was to deteriorate low temperature performance and satisfactory behaviour could usually be achieved by the use of suitable (ester) plasticizers.

Reference was made to work by BRPRA where addition of dioctyl sebacate to a natural rubber stock had produced a 20°C reduction in brittle point. The general requirements of a plasticizer were (a) compatibility with the base polymer and (b) low viscosity at low temperatures. Often plasticizers which gave the lowest brittle points were also the most extractable, particularly in oils such as ASTM No. 1. Blends of polymeric and monomeric plasticizers offered advantages, also the use of swelling polymers such as SBR or neoprene in NBR, although such blends appeared to reflect the low temperature properties of the worst component.

D. A. S.

Gloucester to Canada

Following the increasing demand for vacuum-cast epoxy resin components for the heavy electrical industry, Permali Ltd. of Gloucester have decided to extend this production to their Canadian works. Technical representatives from Gloucester will be going to Canada this month, to supervise the installation and initial production of low-voltage bushings and stand-off insulators. Production of these components at Gloucester has more than doubled in the past twelve months.

A new 100ft. white steel tape manufactured by James Chesterman and Co. Ltd., of Sheffield, incorporates the use of Cobex and Velbex (rigid and flexible vinyls) produced by BX Plastics Ltd.

CORRESPONDENCE

The Rubber Story

To the Editor

Sir,—As a regular reader of your excellent journal, I noted with interest the editorial suggestion in your February 6 1960 issue that the 'rubber industry is a bit backward about putting itself forward.'

May I say that until quite recently this attitude was not entirely unique with the industry in the UK. I refer to any co-operative effort to tell the really fine story that the rubber industry has to tell in the United States—and not to individual company efforts which have been aggressive and effective.

I am happy to report that we have made a modest beginning in the direction of co-operative promotion of the industry in the past two years. Attached is the second edition of our 'facts' book* which is widely distributed to news media, legislators and educators. Moreover, we have just completed a 15-minute movie on the industry and its contributions to both the national defence and the peacetime economy, which will be shown on 270 television stations in this country and over more than 40 stations overseas. After these showings, upwards of 50 copies will be made available for classroom use throughout the United States.

While the beginning is a small one, we believe we are moving in the right direction.

Very truly yours,
CHARLES C. MILLER.
The Rubber Manufacturers Association Inc.,
New York, USA.

*'*This is Rubber Today,' referred to on page 488—ED.*

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—the new low volume cost filler that is now being used extensively where high loadings are required in such compounds as hard rubber mixes and ebonite type formulations

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Tribute to a Pioneer

DUNLOP HONOURS HARRY WILLSHAW

ON the evening of March 15, at the Savoy Hotel, London, the Dunlop Rubber Co. Ltd. gave a dinner in honour of Mr Harry Willshaw, chief consulting engineer, Dunlop rubber factories and director and general manager of Dunlop Advisory Services Ltd., who has been with the company for 47 years.

Among those present were Mr Reay Geddes, managing director of the Dunlop Rubber Co. Ltd., Dr J. G. Mackay, chairman of Francis Shaw and Co. Ltd., Mr D. B. Collett, a director of Dunlops, Mr George Lanchester, and representatives of Dunlop factories in the UK and overseas.

This very pleasant occasion can perhaps best be described as a fraternal gathering for there was about it a warm, almost family atmosphere and, too, a wealth of good fellowship in the evident pleasure expressed by those present at the opportunity to honour the principal guest.

Proposing his toast, Mr D. B. Collett said that Harry Willshaw first went to work as a young engineer over 50 years ago. In 1908 he joined the Lanchester Motor Company and received his early engineering training there under Mr George Lanchester. In 1913 he joined the Dunlop Rubber Co. when its principal activities in this country were based on the factories at Aston Cross and Manor Mills. During his early career with Dunlop he undertook special assignments for the company in France and later at Buffalo in the United States, and it was not until 1925 that he returned to Fort Dunlop on appointment as equipment engineer. In this capacity Harry Willshaw made a tremendous impact on the advancement and improvement of methods employed in the tyre manufacturing industry and the rubber industry as a whole.

The RABRM had provided a list of nearly 200 British, American and Canadian patents associated with Mr Willshaw's name and, said Mr Collett, 'I gather he hasn't finished yet.' He had also delivered a number of technical papers, his monograph on calenders—prepared for the IRI was a classic.

Mr Collett went on to say that there were other reminders of Harry Willshaw's distinguished career. During the last war he had served as Chairman of the Reconstruction Panel for the Midlands, and for his outstanding services in this capacity was awarded the O.B.E. Then in 1958 the IRI awarded him the Hancock Medal for outstanding services to the industry, particularly in the fields of engineering and education.

It was in 1945 that Harry Willshaw had been appointed chief engineer, Dunlop Rubber Factories, and from this new position in London he has continued to spread the benefits of his energy and great experience in step with the growth of Dunlop activities both at home and abroad. His integrity, his energy, enthusiasm, initiative and by no means last, his loyalty, all came to mind. In every respect, said Mr Collett, 'He's up early in the morning, and although at times he must have pushed his physical strength to the limit, his indomitable spirit has never flagged.' The fact was, continued Mr Collett, Harry Willshaw was one of the outstanding pioneers of equipment engineering in the rubber industry. In his early years there were not so many people Harry Willshaw could turn to for expert help. As a result, he developed the art of tackling problems and solving them for himself. Improvements in factory methods and the flow of production have been spectacular. Working conditions, health and safety measures are infinitely better. In all these Harry Willshaw and the team he built up had played a major part.

'I should like to say,' concluded Mr Collett, 'very sincerely and quite simply, that the rubber manufacturing industry owes a great deal to the career of Harry Willshaw. He has contributed in no small measure to its productive efficiency, its safety and the happiness of those engaged in it. We are proud to honour him at this gathering.'

Afterwards, Mr Collett read a number of letters and cables from people in all parts of the world. Among those who sent good wishes were Mr Philip Proctor, managing director, Dunlop, New Zealand; Mr N. J. Mould, works director, Dunlop, South Africa; Mr Joseph Brown, David Bridge Ltd., wrote that he had known Harry Willshaw for more than 30 years. 'It was indeed fortunate for me as a young engineer to meet a man of such calibre, vision, endeavour, character and integrity, so early in my career.' 'Mr Willshaw,' he added, 'is a great Englishman. His name is legendary abroad, particularly in the USA and Russia. With the interests of the Dunlop Rubber Co. always paramount in his mind, he has been also a fine ambassador at large for his country.' Cabling from the USA, Mr Michael Billane, president of Dunlop Tyre and Rubber Co., Buffalo, New York, said: 'In the words of a famous song, Harry, you may be a rambling wreck from Georgia Tech, but you're still a hell of an engineer.

(*Top*) **W. E. Hardeman, Harry Willshaw, George Lanchester, E. Sullivan**
(*Bottom*) **Reay Geddes, E. J. C. Faulkner, Vaughan Willshaw**

Good wishes from all your Buffalo buddies.'

In seconding the toast to Mr Willshaw, Dr J. G. Mackay said that 47 years ago, when Harry Willshaw joined the rubber industry, it was a rule of thumb industry, worked out on the shop floor. When the first scientists and engineers came along they had not always been appreciated. However, it was men of Harry Willshaw's generation who had performed a tremendous service to the industry. The major part played by Mr Willshaw was well known. One of his great interests was making machines safe and he had also always taken a great interest in technical education.

(*Left*) **D. B. Collett, W. W. Foster** (*Right*) **F. Walker, W. J. Cornforth**

Although he had known Harry Willshaw for 27 years, it was only in the last three years, went on Dr Mackay, when they had been associated through Dunlop Advisory Services and Rustyfa, and had made many trips together, that he had learned really to appreciate Mr Willshaw's real quality.

H. W. REMINISCES

'An occasion such as this,' said Mr Harry Willshaw, after thanking the directors of Dunlop for arranging the dinner and inviting so many of his friends, 'allows for some reminiscence.'

He went on to say that he could well remember his first impression of the pressing of tyre shapes between large masses of metal—the casing being cold pressed, then semi-vulcanized, semi-cured, tread fitted and finally vulcanized. So it was when he started work at Para Mill, Aston. Casings on solid iron cores and moulds (no tread pattern) slid on greased steel tables in and out of the presses and autoclaves, by tug-of-war men.

Following a period collecting facts for a new factory, now Fort Dunlop, said Mr Willshaw, he was posted to Manor Mills.

'What a place Manor Mills was to work in, for mixing mills and calenders were driven from a steam engine and evil smelling native rubbers, *i.e.* Couchou ball, Afghans-Pontianat and Para were boiled before washing just inside the factory entrance, as plantation rubbers as now were only just making their first appearance.

'Tyres made on wooden drums were positioned on steel drums and vulcanized as flat bands inside out.

'Bowler hats were worn by engineers and straw hats by production staff. Process control as such was in the hands of the production superintendent, who carefully cut vulcanized strips with his penknife and placed them between his teeth to determine elongation and permanent set. Carbon Black — thank goodness! — was not commonly used and any connexions from this *hand to mouth extensometer* were generally made with an addition or subtraction of $\frac{1}{2}$% of lime.'

With the advent of war, said Mr Willshaw, practically everything was scrapped except solid tyres for which I was later put in charge. 'This was followed by a year in France, 1916, dealing with repairs and establishing the manufacture of solid tyres at Argenteuil.' Mr. Willshaw then returned to what is now Fort Dunlop, installing equipment for solid tyres and steel bands, the first being produced on May 2 1917, when he became assistant works manager. In March 1919 he was sent alone to the USA to find a suitable site for a new factory between New York and Chicago. 'This really was something, and what money I could have made if I had known then what I know now!

Embarrassing Moments

'I recall my first meeting with Mr Sorenson who was then Chief Engineer of the Ford Motor Co. at Detroit, when I met Mr Ford 1 and gave a demonstration of the wheel base rim developed by Dunlop and which could be removed from the rim by hand. Mr Ford asked if this could be done again which I did and although my mission was to influence getting an order for 500 tyres a day, Mr Ford said to Mr Sorenson "Order a set of five for my Lincoln".'

In 1928, Mr. Willshaw continued, they produced a project to provide Fort Dunlop with a mixing capacity of 2,800,00lb. per week.

'Just before this time, however, there was an interesting event, that of allowing the Sales force into the factory and on this occasion we had just completed the automatic timing of cycle tyre presses. Leading the head of the Sales force and his retinue, it was getting near the lunch hour, I made a great point of explaining the automatic system of timing and press operation of some 100 or so presses. I was asked "did this avoid those over-cured tyres we have been getting?" I said "Yes, that kind of thing could not happen."

'We waited for the 3½ minute cure—it expired—nothing happened. We found that the engineer exercising his powers affecting economy, had switched off the main supply before going to lunch!

'Another embarrassing moment to me was when I was sent out to study the manufacture of Lastex, that wonderful material of two-way stretch, when the man I was interviewing said "Send in the models" and to my amazement and embarrassment they were live ones.'

Outstanding Team

There was another period, continued Mr Willshaw, which he wanted to mention—that of forming the 1st Reconstruction Panel to deal with the effect of enemy action on the vital factories in the Birmingham area, 1940-1944, and of which he was chairman. The knowledge gained of improvization during the lean years the company had passed through was really put into effect and to that outstanding team of Birmingham Engineers, he said (no one could have had a better), he would always be grateful and remember.

That was his short story of Dunlop's progress with which he had been associated. Its manufacturing and processing factories had increased from three factories at home and four overseas when he started, to now 46 at home and 56 overseas or thereabouts.

Mr Willshaw concluded: 'I referred earlier on to Mr George Lanchester as a "Pioneer." One dictionary describes the word pioneer as "one who goes before to prepare the way for another." I have tried to qualify for this in my long service to the company and I shall be quite happy on retirement if afterwards I am referred to as a "Pioneer" or even an Associate of such a distinguished company, but not as a Graduate.'

Plantation Commentary

BITTERNESS ABOUT LACK OF RUBBERIZED ROADS

by our Malayan Correspondent

STRANGE as it may seem, the Malayan Public Works Department is among the most conservative of road authorities when it comes to considering rubberized roads—a scheme that the natural rubber industry has assiduously plugged at considerable expenditure as a means of increasing the demand for rubber. For years Malayan rubber producers have commented, in Parliament and out, on the paucity of 'rubber roads' in Malaya and often with some bitterness. But the Public Works Department has stuck to its guns.

The department is still doing so and it announced here that while it was going to continue using rubber in certain portions of its road-making projects, it would be years before it could be decided whether such roads would be economic.

Another Seven Years

As a spokesman pointed out: 'A normal road lasts for about 12 years; if the rubber road is to be economic it must last at least 15 years. We have been experimenting with rubber in roads over the past six or seven years but we need at least another seven or eight years to decide whether rubberized roads should be used to a great extent. They cost $5,000 more a mile to construct than normal roads.'

This year the department will spend rather less than £100,000 on rubberized roads throughout Malaya. This will pay for about 20 miles of road in sections throughout the country where Federal roads need re-surfacing. In all, this will mean about 40 miles of rubberized stretches will be laid.

This year's programme is an increase on previous years, but it falls short of the wide stretches of rubberized roads from airports, ports and stations which some legislators have called for as a means of showing visitors how good a rubberized road can be.

Malayan engineers, however, are in fairly good company. The Blackman committee on research suggested some time ago that there should be a little less publicity effort and rather more effort on careful investigations of the value of rubber in roads. Sir Geoffrey Clay, the Controller of Research in Malaya, last year recommended stopping heavy expenditure on development work for rubberized roads in America as the price of synthetic rubber was making it very competitive in this field. In countries where synthetic has not got such a good hold, such as in New Zealand and Australia, he recommended that the publicity campaign should continue.

At present an American road consultant is holding a watching brief for the natural rubber industry with regard to the rubberized roads being built in the United States.

The vast majority of Malaya's smallholdings are known to be very small, averaging out at about four acres each. A new scheme, which is only for Malayan citizens and is likely to benefit Malayan smallholders most, is now being tried out by the Government to let the very small smallholder have his cake and eat it. More accurately, he will be able to replant and eat.

The problem has been that for the small man to chop down even a portion of his old smallholding rubber, often little better than firewood rubber, has meant a substantial loss of income—cash income which he cannot afford to lose. The new scheme will allow him to keep his present rubber while he plants elsewhere. Funds are being provided to carry it out on a date to be announced later. There are excellent reasons for making the effort, politically and otherwise, for it will give the small man a chance to benefit from the scientific progress that has been made with the rubber tree.

The smallholders must have less than five acres of rubber and they will get a replanting grant of about £50 an acre. They will get six or seven acres of land each, in addition to their present rubber, which they will plant up on a block system of not less than 100 acres with approved high-yielding material. They will get the first half of their replanting grant six months after the area has been planted and the rest in two equal instalments one and two years after the first instalment.

A special board is to be set up to handle this scheme. A Government official said: 'The idea is to give the very small people more land so that they will have larger and more economic units to produce a steady income and a better standard of living'

Cottage Plastics

Singapore plastics manufacturers are considering asking for protective tariffs from the Government because of the heavy competition from Britain, Hong Kong and Japan. Manufacturers are complaining that they have increasing difficulty in carrying on at present. There are about seven factories working in Singapore at present, none of them large, producing goods worth about £50,000 a year.

Most of the plastics goods manufactured in Singapore are sold in Malaya, despite an import duty imposed by the Federation Government. The manufacturers have pointed out that there is a growing market, both in Singapore and Malaya, which the Singapore factories could supply if they got some form of protection.

The manager of one of the larger companies, Mr Tay Eng Tak, claimed that the local market was being glutted by products from Britain and Hong Kong. It was difficult for Singapore manufacturers to get a fair share of the market with imports in the first eight months of last year running at about £250,000. About 40% of the imported plastic articles came from Hong Kong, 30% from Britain and 10% from Japan with other countries sharing the remainder.

'The Singapore industry is in need of protection in order to allow it to expand and give more employment,' he said: 'I think there is a good reason for the Government to give some protection in view of the fact that Singapore is now capable of producing high quality articles comparable with those imported from Hong Kong, Japan or Europe.'

They were also concerned by reports that Japan might set up a plastics plant in Singapore. The local manufacturers were considering forming an association, one of whose first tasks would be to ask the Government to restrict imports.

Meanwhile there are reports that the Rural and Industrial Development Authority, a Government concern, is considering a plastics factory in Malaya, though there has been no confirmation. The authority is pressing forward with a programme of cottage industries concerned with plastics and plastic articles on the same lines as the small industries introduced in Hong Kong.

Queue for Trade

Malaya hopes to increase her sales of rubber to at least three countries through trade agreements once arrangements can be made to convene the necessary talks. The three, New Zealand, the United Arab Republic and Germany, are waiting in the queue as Malaya's shortage of senior officials and other commitments make it difficult to get around to further trade talks.

Malaya hopes to sell more rubber, tin, spices and pineapples to New Zealand and may take more condensed milk, milk powder, and butter; rubber, tin, coffee and copra might be sold to the UAR with Malaya taking UAR cotton, phosphates, onions, leather, cigarettes and artificial silk; Germany may also be expected to take more rubber and is interested in getting an agreement on the protection of her investments in Malaya.

Pioneering

The planned Dunlop factory near Kuala Lumpur (*RJIP*, February 27) seems likely to be capable of meeting the Malayan demand for tyres which is about 150,000 car and 50,000 lorry tyres a year. The factory is expected

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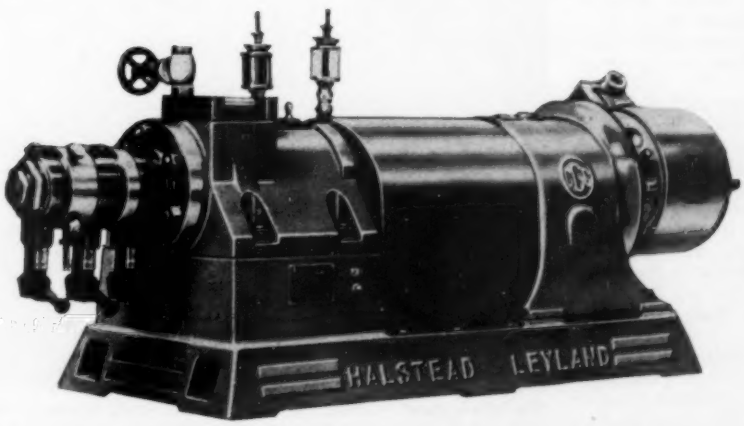
Rubber and Plastic Engineers



1½" bench type rubber extruding machine with electrically heated extension and die head

initially to produce 400,000 tyres a year of which 200,000 will be for export. Forty acres of land have been purchased for the plant at Petaling Jaya which is about six miles from Kuala Lumpur and a growing industrial complex. The factory may take about 21 months to build, it is understood, and will employ about 800 Malayans.

For its initial rate of production, the factory will use about 2,000 tons of Malayan rubber and imported fabrics and chemicals, though it is expected that the presence of the tyre factory will stimulate the production of these materials. Equipment will be installed by British technicians and the entire factory is likely to cost a little under £3 million.

Pioneer status has been granted to Dunlop 'in principle' and is conditional on the company satisfying the Government on the degree of tariff protection required. The company wants tariff protection either by import restrictions or higher duty and the question is being discussed this month (March 11) by the Tariff Advisory Committee when several Dunlop representatives are expected to be here to help put the case.

To date the Malayan Government has given 31 companies pioneer status in Malaya, a number of them with British capital. Products being made or to be made shortly by these companies include such a varied range as asbestos, cables, batteries, meters, paints, synthetics, fabrics and plastic articles. Under consideration by two oil companies, who are both making investigations, is an oil refinery.

Penny Packets

Both the Government and the rubber industry in general are at loggerheads with the National Union of Plantation Workers over the number of estate workers who have lost their jobs through fragmentation, the system under which estates are purchased by financiers and then sold off in penny packets minus the estate staff who have usually to find work elsewhere.

A conference of union delegates demanded an immediate report from the Government on fragmentation and claimed that the whole process would be disastrous to the country's economy in the long run. It was claimed that in one State, Perak, companies registered in Britain, Ceylon and Hong Kong had sold estates costing about £4m. which had been broken up and sold to Malayans. The union's cause for concern is that the new owners, who may be small men, who have purchased a portion of the estate, usually tap the rubber on their own or with members of their family and relations.

The union's estimate is that in Malaya 290,000 acres have been fragmented out of the 2,000,000 of estate rubber. The union also estimates that 12,000 estate workers have been thrown out of jobs in the last three years.

The Governments latest figure is 173 estates totalling 434,687 acres fragmented with 7,699 workers dismissed as a result. The matter is to be debated in Parliament and more information is to come out then, but variations in the figures offered by the union and the Government are no greater than the varied views being expressed on all sides about the harmfulness or otherwise of fragmentation to the country's economy. At the moment, neither side seems willing to give in and the debate may be endless.

The union is also demanding severance pay for all dismissed workers and has also alleged that on some estates companies are indulging in wholesale dismissals so as to change from one racial group of tappers to another. The Malayan Planting Industries Employers' Association has strongly denied this and pointed out that of the 281,000 estate workers, about 50% are Indians, 30% Chinese, and the rest Malays with little variation from year to year.

Safety Firestone

Employees of Firestone, Akron, Ohio, continue to improve their safety record. Thirteen of the company's world-wide plants finished 1959 without a lost-time accident, it was revealed recently, and the accident frequency rate for the year was 1.5—6% down on 1958. Average national accident frequency for 1959 was 3.7.

Company plants compiling an accident-free year included Akron synthetic rubber plant; Pottstown, Pa., plastics; Los Angeles industrial products, fuel cell division and Xylos plant.

The Glasgow office of Turner Brothers Asbestos Co. has been moved to 80 York Street, Glasgow, C.2. Telephone number is unchanged.

CANADIAN RUBBER

JANUARY CONSUMPTION UP

Canadian rubber manufacturers during January continued to operate at higher level and consumption of all rubber in the month increased to 9,630 long tons compared to 9,127 tons in January 1959. The consumption of natural was unchanged in the month from year earlier, at 3,341 tons, but synthetic use rose to 4,797 tons from 4,394 tons and reclaimed to 1,492 tons from 1,392 tons.

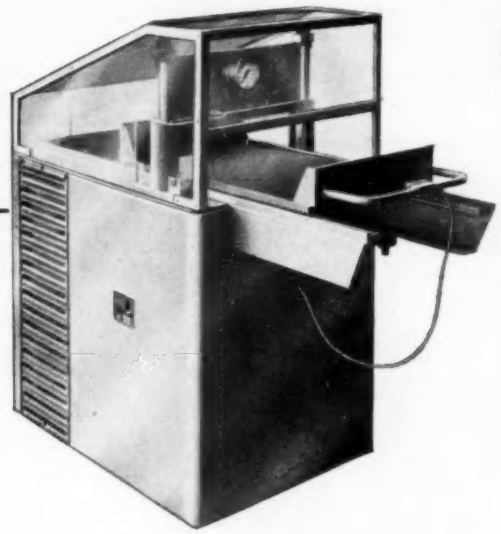
In January consumption of tyres and tubes accounted for 6,679 long tons (6,282). There were 2,465 tons of natural rubber consumed for the production of tyres and tubes; 3,268 tons of synthetic and 946 tons of reclaimed.

Producers reported having on hand at end of the month of January 6,929 long tons of all kinds of rubber. Produced during the month were 12,596 tons of synthetic and 436 tons of reclaimed.

The latest Bureau of Statistics report also shows that consumption of natural in Canada in 1959 amounted to 44,271 long tons, or 43.6% of new rubber, compared with 37,084 tons year before and percentage of 44.3%. Consumption of synthetic rubber amounted to 57,204 long tons in 1959 compared to 46,715 year before and percentages respectively were 56.4% and 55.7%. Reclaimed used amounted to 17,073 tons, compared to 15,121 year before.

The F'AG Bearing Company Ltd. of Wolverhampton, UK sales organization of Kugelfischer Georg Schafer and Co., Schweinfurt, Western Germany, have opened new branches at 86 Bristol Street, Birmingham 5 (Tel.: MIDland 9209) and 69 Temple Street, Wolverhampton (Tel: W'ton 20386).

World's largest 'sewing bee' at Phoenix Park, Arizona. Workers at Goodyear Aircraft Corporation fit together huge envelopes of rubberized fabric for US Navy airships. Thousands of yards of neoprene-coated fabric make up the outer envelope, which may have a capacity of 1,500,000 cubic ft. Workers have to stand shoulder to shoulder for 380 ft. when the envelope is folded



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Rubber Statistics

MALAYA — FRANCE — GERMANY

DETAILS of Malaya's ocean shipments and imports for the month of January have now been issued by Malaya House. The following tables summarize the information received:

Ocean Shipments to:	Sheet and Crepe	Latex
UK	9,170	2,630
USA	13,073	1,794
South Africa	1,736	130
Canada	2,491	—
India	1,493	—
Australia	2,109	656
Bulgaria	1,160	—
Czechoslovakia	1,830	—
France	6,620	476
Western Germany	11,755	1,560
Italy	4,323	626
Netherlands	1,072	403
Poland	4,051	10
Spain	1,684	172
Sweden	1,986	306
Argentina	1,302	77
Brazil	2,242	—
China	3,452	—
Japan	10,619	1,823
Others	7,772	605
	89,940	11,268

Imports from:	Total
Indonesia:	
Sumatra	19,507
Borneo	8,328
Remainder	3,316
British Borneo	4,613
Thailand	3,062
Others	2,376
	41,202

Total ocean shipments during January totalled 101,208 tons or some 5,000 tons more than the December shipments. Imports on the other hand, at 41,202 tons, were some 3,000 tons lower than those for the preceding month.

Stocks of rubber on hand in Singapore at the end of January totalled 41,780 tons, and included 31,656 tons held by dealers and 10,098 tons held in the port. In addition, there were 2,825 tons on foreign transhipment. Federation stocks at the end of the preceding month had amounted to 63,902 tons, of which 39,017 tons were held by dealers and 16,342 tons by estates, while 8,543 tons were in the ports. Total Malayan stocks of rubber at the end of the year are estimated to have reached 109,616 tons, though this figure was more than 20,000 tons below the stock level at the end of 1958.

France

The Secretariat of the International Rubber Study Group has now published details of the French rubber situation up to the end of November last.

During the first eleven months of the year, France imported 96,805 tons of crude natural and 11,068 tons of natural latex. This amounted to some 17,500 tons less natural rubber than in the corresponding period of the preceding year. In particular, imports from Vietnam dropped from 55,627 tons to 32,928 tons. At the same time, imports from Malaya rose from 52,601 tons to 56,063 tons. Other countries sending their rubber to France during this period included Cambodia (4,468 tons), French Africa (1,038 tons), Indonesia (2,444 tons), the Belgian Congo (6,284 tons) and Ceylon (3,066 tons). Exports amounted to 561 tons, leaving a new supply available for consumption of 107,312 tons.

The actual consumption total for natural rubber during this period was 120,730 tons, of which 108,738 tons were of crude and 11,992 tons of latex; this was some 6,500 tons less than in the preceding year. Stocks of natural rubber on hand at the end of November stood at 6,287 tons of crude and 727 tons of latex, having fallen by about half during the course of the year.

Imports of synthetic rubber during this period amounted to 59,913 tons, an increase of some 7,000 tons compared with 1958, 43,984 tons coming from the USA and 9,620 tons from Canada. Consumption during the same period totalled 62,088 tons, an increase of some 12,500 tons compared with the earlier period; this figure included 43,964 tons of S-Type, 6,587 tons of neoprene, 8,437 tons of butyl, 1,792 tons of N-Type and 1,308 tons of synthetic latices. Stocks of synthetic on hand at the end of November stood at 8,717 tons, having remained almost unchanged over the course of the year.

Western Germany

The Study Group has also released details of the Western German rubber position up to the end of November.

In this case, imports of natural had risen by 7,000 tons compared with the previous year, to stand at 127,036 tons. This figure included 114,710 tons of crude natural and 12,326 tons of natural latex. Malaya was the most important supplier with 64,251 tons, and was followed by Indonesia with 16,944 tons, Vietnam with 11,946 tons and Nigeria with 11,358 tons. Other countries supplying appreciable quantities of this rubber included Ceylon (10,373 tons), Thailand (3,921 tons), Burma (3,243 tons), the Belgian Congo (2,345 tons), Liberia (1,044 tons) and British North Borneo (1,019 tons). After allowing for exports, there remained available for consumption 126,220 tons of natural.

The actual consumption total for this period was 130,108 tons and included 11,703 tons of latex; it represented an increase of some 5,000 tons compared with the earlier period. Stocks of natural at the end of November stood at 7,624 tons of crude and 952 tons of latex; the stocks of crude had incidentally fallen by nearly half since the beginning of the year.

Imports of synthetic rubber during these months amounted to 31,920 tons, of which 22,914 tons came from the USA, 4,203 tons from Canada, and 3,446 tons from Italy. Compared with the previous year, there was a decline of about 5,000 tons in these imports. In addition there was local production of synthetic amounting to 42,184 tons, more than double the 1958 figure for the same period.

On the other hand, exports of synthetic went up from 4,351 tons to 10,469 tons, to leave a new supply of synthetic available for consumption of 63,635 tons (almost exactly half the new supply total for natural rubber).

The actual total for synthetic rubber consumption during this period was 62,286 tons, an increase of 15,000 tons compared with the previous year, and stocks at the end of November stood at 6,624 tons, having fallen only slightly during the course of the year.

Reclaim rubber consumption in Western Germany during these months amounted to 38,180 tons, production during the same period having amounted to 38,796 tons; this represented an increase of some 4,000/5,000 tons in each case. Stocks of reclaim on hand at the end of November amounted to 3,647 tons, a decline of about 1,200 tons since the beginning of the year.

PIGS v. BAGS

Held to a tie in the singles by the Building Association Golfing Society in their annual match at St. George's Hill on March 17, the PIGS triumphed in no uncertain fashion in the foursomes, taking these 4½—1½ to win the event handsomely enough. Details were as follows:

PIGS		BAGS	
T. S. Crabtree (capt.)	1	A. V. Waddell	0
F. Garrett	1	E. H. Bole (capt.)	0
B. Skinner	1	D. Macalister	0
P. Smith	1	J. Harper	0
F. Fletcher	0	I. D. Forbes	1
R. P. Anderson	0	E. J. Erith	1
R. Banks	1	W. Herbert	0
R. Gurney	0	R. P. Shannon	1
P. Attwood	0	G. W. Smith	1
H. Brooks	0	A. Trigg	1
T. E. Breakell	0	J. L. Barnard	1
E. J. Lassen	1	S. Hurden	0
	6		6
Attwood and Smith	1	Smith and Harper	0
Gurney and Brooks	1	Shannon and Trigg	0
Lassen and Breakell	1	Hurden and Barnard	0
Crabtree and Banks	1	Waddell and Herbert	0
Skinner and Anderson	½	Macalister and Erith	½
Garrett and Fletcher	0	Bole and Forbes	1
	10½		7½

PATENT SPECIFICATIONS

The following information is prepared from published Patent Specifications by permission of the Controller of H.M. Stationery Office. The full Specifications can be obtained from the Patent Office, 25 Southampton Buildings, W.C.2, at 3s. 6d. per copy (including postage).

Flexible Barges or Storage Vessels

No. 824,506. Dracone Developments Ltd. Inventor: W. E. Morton. Application, July 22 1957. Filed, July 21 1958. Published, December 2 1959.

A flexible barge or other flexible storage vessel for transporting and/or storing liquid or granular solid materials comprises a fabric envelope made up of two or more layers of textile cords, preferably nylon cords, the layers being bonded together with rubber or a rubber-like plastic. In at least one of the layers of cords, the cords extend lengthwise of the envelope while in at least one of the other layers, the cords are wound circumferentially of the envelope in helical turns with a small lead. When there is an even number of layers of the latter type, half the number is preferably wound in the opposite sense to the other half. The barge has an inner coating resistant to attack by oil or other material being transported or stored and an outer coating resistant to sea water and/or weathering.

In an example of a barge made according to the invention, three layers of nylon cord are used and the barge has a volume of about 1,900 cu. ft. When in the form of a collapsed tube, the barge measures about 600ft. by 50ft.; it may be folded over once to a width of 25ft. and then rolled up to form a cylindrical package about 25ft. long and 12-15ft. in diameter.

Preparation of Sheet Rubber

No. 826,709. Mac and Lai Co. (Malaya) Ltd. Inventor: D. McCall. Application and Filed, June 26 1957. Published, January 20 1960.

Natural rubber latex is diluted with water to a rubber content of about 15% and there is then added a coagulant and a four-component additive. The coagulant is sheeted in the usual way and the resulting sheet is allowed to dry in the absence of weed smoke. The dried sheet is comparable to ordinary smoked sheet and has the added advantage of greater mould resistance. For every 1,280 parts of dried sheet, the additive comprises 1 to 3 parts of paranitrophenol, 6 to 20 parts of formic acid, 0.0352 to 0.352 parts of oxalic acid and 1 to 12 parts of formaldehyde solution, all parts being by weight.

Formic or acetic acid may be used as the coagulant, the formic acid in the additive being additional to the normal amount of the acid coagulant. In general, the additive is diluted with water before addition to the latex-coagulant mixture; alternatively, the additive may be diluted by adding it to the coagulant and then adding the mixture of coagulant and additive to the latex. The additive serves to dehydrate the sheeted coagulum, so that the sheets can be dried by hanging in a shed for 4 to 6 days at tropical atmospheric temperature.

Shorter Abstracts

Resin Composition. 822,981. Union Carbide Corporation. Filed, May 22 1957.—A resin composition comprises essentially a mixture of 5-55% of a copolymer of vinyl chloride and octyl acrylate and 45-95% of PVC or a copolymer of vinyl chloride with an ethylenically unsaturated monomer.

Deflashing Rubber Articles. 823,101. The British Oxygen Co. Ltd. Filed, December 20 1957.—The use of a very low temperature, namely below −100°C., is claimed in the deflashing of rubber articles by tumbling. The low temperature may be achieved by the use of liquid nitrogen.

Silicone Rubber. 821,477. Union Carbide Corporation. Filed, April 25 1957.—Dicumyl peroxide is claimed as a curing agent for heat-curing siloxane gum-carbon black stock to form silicone rubber.

Electrical Insulating Material. 822,024. General Electric Co. Filed, February 24 1956.—An electrical insulating material comprises a cured composition of at least 50% of PVC or like polymer, 10-40% of a plasticizer together with not more than 20% of an epoxide polymer and a polyamide curing agent for the epoxide polymer. Compared with PVC, the composition has decreased thermoplasticity at elevated temperatures.

Cricket Balls. 822,052. Rubber Improvement Ltd. Filed, September 26 1957.—A cricket or like ball is made by forming a core containing (1) cork and (2) rubber or a thermosetting macromolecular material, placing the core in two hemispherical parts of a cover of unvulcanized or partly vulcanized rubber, and then heating the assembly in a mould under pressure to consolidate and vulcanize the parts to form a ball.

Container for Polythene. 822,289. Union Carbide Corporation. Filed, December 9 1955.—A collapsible shipping container for polythene and PVC powders is made of layers of fabric and neoprene or other synthetic rubber or a plastic, filling devices being provided whereby an inert gas can be supplied to the container before, during or after the filling takes place.

Silicone Rubber. 822,649. General Electric Co. Filed, January 28 1957.—The flame-retardant property of silicone rubber is improved by incorporating in the unvulcanized silicone rubber an inorganic filler and 0.25 to 25% of a cupreous material selected from copper, copper oxides, copper halides and copper oxyhalides.

Anti-static Agent for Polythene. 822,729. British Cellophane Ltd. Filed, May 21 1957.—The tendency of sheets or films of polythene to accumulate electrostatic charges is reduced by incorporating a 1-hydroxy-ethyl 2-alkyl glyoxalidine in the surface or in the whole of the polythene.

Blowing Agent. 822,976. Imperial Chemical Industries Ltd. Filed, April 18 1958.—The compound N:N¹-dinitroso-N:N¹-dimethylglutaramide is claimed as a blowing agent for rubber and plastics.

Rubber Crop Returns

Unless otherwise indicated the figures quoted, to the nearest thousand lb., represent crop returns for the month stated and for the number of months of the planting company's financial year to date. Corresponding figures are given in parentheses.

RUBBER ESTATE AGENCY

February

Kuala Lumpur.—598 (551). 5 mths—3,362 (3,391).
Jeram.—298 (283). 5 mths—1,645 (1,483).
Tamiang (Malaya).—58 (71). 5 mths—367 (375).
Sungei Kahang.—115 (127). 5 mths—755 (684).
Bandar Sumatra.—76 (90). 7 mths—667 (745).
Batu Kawan.—44 (47). 6 mths—407 (368).
Buntar.—100 (89). 2 mths—223 (194).
Kepitigalla.—53 (57). 11 mths—646 (662).
Langkat Sumatra.—78 (73). 2 mths—163 (163).
Sungei Bahru.—117 (86). 8 mths—1,073 (865).
Tambira.—110 (87). 8 mths—939 (898).
Tanjong Malim.—289 (303). 8 mths—2,919 (2,870).
Sennah.—136 (143). 2 mths—343 (286).
Amalgamated Rubber.—46 (37). 2 mths—81 (79).
Java Rubber.—98 (88). 2 mths—191 (181).
Soember Ajoe.—18 (31). 5 mths—75 (144).

THOMAS BARLOW AND BROS.

February

Bradwall (FMS).—131. 2 mths—283 (234).
Chersonese (FMS).—65. 2 mths—145 (107).
Highlands and Lowlands Para.—1,821. 2 mths—3,933 (3,642).
Krian Rubber.—5. 2 mths—13 (14).
Sungei Krian.—163. 2 mths—353 (296).
Muar River.—234. 14 mths—3,627 (3,709).

HARRISONS AND CROSFIELD

December

Bajoe Kidoel.—197 (229). 9 mths—1,783 (1,895).
Djasinga.—106 (118). 6 mths—621 (694).

February

Inch Kenneth Kajang.—177 (130). 2 mths—357 (318).
Kemasul.—35 (33). 2 mths—75 (83).
Batu Tiga.—153 (134).
Beau Sejour.—46 (57). 7 mths—487 (478).
Sungei-Timah.—54 (46). 11 mths—518 (546).
Kuala Reman.—156.

Rubber and Plastics Stock Market

A REVIEW OF PRICES AND TRENDS

A PERIOD of sharp contrasts. In the first half share prices remained in the doldrums and the industrial equity index reached a new low of 306.1 for the year. At this point it seemed evident that the market was oversold and due for some kind of recovery. For after all, as a result of what had been quite a hefty shake-out, many of the leaders offered attractive yields. Broadly speaking, there had been little selling during this period in any case. Most of the genuine investors appreciated the fact that the outlook for the stock market had not changed a great deal, and, most important of all, the flow of news from the company boardrooms continued to be good.

But, though expected, the sudden change in atmosphere which came almost overnight must have been a surprise. Our friends in Throgmorton Street told us that both the small and large investment quarters produced big buying orders once more. Inquiry continued all through last week. It left the share index showing a gain of 14.7 points at 322.6, a rise of more than 4½% in values.

The new trading period which started on Monday will be the last to be completed before the Chancellor of the Exchequer presents his Budget. Normally, prior thoughts of this would act as a restraining influence, but during this time there will be some important dividend announcements from some of the country's giant industrial combines. What they decide to pay shareholders plus their profit showings will, we forecast, play an important role in the immediate future of share prices.

Leading the way will be IMPERIAL CHEMICAL INDUSTRIES, generally regarded as the cornerstone of our economy. We predict that the group's trading results are going to be even better than most folk expect. Of its many interests we have already had an indication of how well it has done from the nylon and 'Terylene' sides.

For investors with shares in I.C.I. and other plastic-making groups there was further good news. Mr Norman Punfield, retiring chairman of the British Plastics Federation, reported that he sees no check to the advance of the industry's boom.

Meantime, another company to report on a rise in profits was BAKELITE. For 1959 they returned £1,542,750 against a previous £809,836. The dividend has gone up by 2½% to 17½%, with a final payment of 11½%. After increased depreciation of £292,200, tax of £590,350 against £250,609 and other charges, the net figure worked out at £613,842, compared with £239,330. Equity earnings have soared from 22% to 63% and the cover for the dividend is fully 3½ times. The high degree of dividend conservatism suggests that the board are deliberately ploughing back funds to provide for future expansion and other developments.

STOREY BROTHERS AND CO. disclosed

Continued on page 487

Share Price Movements

Par Value	Company	1959-60 High	Low	Mar. 12	Latest
£1	A.E. Ind. Ord.	67/6	53/9	58/6	56/3
5/-	Albright & W. Ord. ..	31/-	13/4½	28/6	30/9
£1	,, ,, ,, 5% Pref.	18/9	15/4½	17/3	16/6
5/-	Anchor Chemical Ord...	27/6	10/3	26/-	25/6
5/-	Andersons Rub. Ord. ..	4/6	1/1½	3/1½	3/3
£1	Angus Geo. Ord. ..	44/6	25/3	41/3	43/-
5/-	Ault & Wiborg Ord. ..	24/-	11/6	21/-	21/9
£1	Avon India Rubber Ord.	47/6	35/6	40/-	36/3
£1	,, ,, ,, 6% Pref.	18/9	16/6	18/9	18/9
10/-	Bakelite Ord.	46/3	22/-	42/6	43/-
£1	,, 6% Pref. ..	19/6	17/6	18/9	18/-
£1	Baker Perkins Ord. ..	53/9	41/3	51/-	51/-
4/-	Bank Bdg. Rubber Ord.	3/7½	1/6	3/6	3/6
5/-	Boake (A) Roberts Ord.	30/3	12/3	30/3	30/3
£1	,, ,, ,, 5% Pref.	16/9	13/9	16/3	16/3
4/-	Brammer H. Ord. ..	18/3	9/6	18/3	17/-
10/-	Bridge, David Ord. ..	58/-	24/3	55/-	55/-
5/-	Bright, John Ord. ..	18/9	9/6	16/3	16/6
2/-	Brit. Ind. Plas. Ord. ..	13/6	6/9	13/9	8/-*
2/-	,, 10% (tax free) Pref.	4/9	3/-	4/9	4/9
£1	British Xylonite Ord. ..	88/-	46/-	86/-	88/-
£1	,, ,, 5% Pref.	16/9	15/-		16/9
£1	BICC Ord.	61/-	44/6	53/-	56/-
5/-	BTR Ind. Ord.	13/3	8/1	12/6	12/-
£1	,, ,, 7½% Pref. ..	24/3	20/9	23/9	23/9
£1	Courtaulds Ord. ..	67/9	20/-	62/4½	66/4½
£1	,, 5% 1st Pref.	18/9	15/7	17/6	17/3
£1	,, 6% 2nd Pref.	22/6	19/-	20/4½	20/6
4/-	Cow, P. B. Ord. ..	8/3	6/6	8/-	8/3
£1	,, ,, 5% Pref. ..	15/6	12/6	15/6	15/6
1/-	Dannimac Mfg. Ord. ..	11/6	5/2	10/6	11/6
10/-	De La Rue Ord. ..	73/9	42/9	71/-	69/6
£1	,, ,, ,, 3½% Pref. ..	12/9	10/6	11/9	11/6
10/-	Distillers Co. Ord. ..	39/6	23/6	34/4½	36/9
£1	,, ,, 6% Pref...	23/-	19/6	21/3	21/3
£100	,, 5% Conv. Loan	£97	£92	£97	£95
£100	,, 5½% Unsec. Loan	£98½	£90	£93½	£92½
10/-	Dunlop Rubber Ord. ..	29/9	17/-	24/4½	24/9
£1	,, ,, 5½% Pref.	20/3	16/3	18/-	18/-
£100	,, 3½% 1st Debs.	£78	£71½	£76	£76
£100	,, 4½% 2nd Debs.	£88	£80½	£86	£86
£1	Eng. Elect. Ord. ..	61/-	37/9	41/6*	44/6
4/-	Ebonite Cont. Ord. ..	15/3	11/-	12/6	12/6
£1	English China Clays Ord.	94/3	47/-	91/10½	91/10½
£1	Goodyear Tyre 4% Pref.	13/-	11/9	12/-	12/-
5/-	Greeff Chem. Ord. ..	33/3	15/-	32/6	33/3

Par Value	Company	1959-60 High	Low	Mar. 12	Latest
10/-	Greeff Chem. 5½% Pref.	8/9	7/6	8/9	8/9
5/-	Hackbridge Hldg. ..	19/9	14/-	15/3	15/7½
4/-	Greengate & Irwell Ord.	7/-	4/-	5/9	5/9
£1	Harrisons & Crosfield Dd.	64/-	30/9	55/7½	54/4½
1/-	Hunt & Moscrop Ord...	2/6	1/1½	2/4½	2/4½
£1	Imp. Chem. Ord. ..	62/9	32/9	61/3	62/9
£1	,, ,, 5% Pref. ..	19/-	15/6	17/6	17/3
£100	,, 4½% Unsec. Loan	£90½	£84	£89	£88
£100	,, 5½% Conv. Loan	£196½	£178	£193	£192
1/-	Kleemann (O. & M.) Ord.	10/3	4/3	9/3	9/4½
£1	,, ,, 6½% Pref.	19/-	14/-	18/9	18/9
2/-	Lacrinoid Prod. Ord. ..	4/3	1/5¾	3/9	3/7½
5/-	Laporte Ind. Ord. ..	33/-	19/3	26/9	33/-
£1	,, ,, 7½% Pref.	24/3	21/10½	23/9	23/9
£1	Leyland & Birm. Rubber Ord.	59/-	39/9	51/10½	50/-
£1	,, ,, ,, 6% Pref.	19/-	17/-	17/-	18/9
2/-	London Rubber.. ..	14/9	6/3	12/1½	12/3
£1	,, 6% Red. Cum. Pref.	20/-	16/3	18/9	18/9
£1	McKechnie Bros. Ord...	71/3	39/3	67/6	67/6
£1	,, ,, 'A' Ord.	67/6	38/9	65/-	65/-
£1	,, ,, 6% Cum. Pref.	17/-	16/-	17/-	17/-
5/-	Monsanto Chem. Ord. ..	27/9	14/9	24/6	25/6
£1	,, ,, 3½% Pref.	13/6	12/-	13/-	13/-
£100	,, ,, 6% Debs.	£104½	£101	£104	£103
£1	North British Rubber ..	21/3	15/7½	20/3	20/4½
5/-	Plastic Enginrs. Ord. ..	28/-	10/3	27/-	28/-
5/-	Redfern Holdings Ord...	7/-	2/6	4/9	4/3
2/-	RFD Ltd. Ord.	6/9	4/-	6/-	5/6
£1	,, ,, 5½% Pref. ..	16/6	12/-	13/9	13/9
2/-	Rubber Imp. Ord. ..	10/9	4/-	6/7½	6/-
2/-	,, ,, 'A' Ord. ..	10/3	3/6	5/4½	5/-
£1	,, ,, 5% 1st Pref.	13/3	10/-	13/1½	12/7½
5/-	Rubber Reg. Ord. ..	19/-	10/-	18/9	18/9
4/-	Shaw Francis Ord. ..	25/-	13/6	24/6	24/10½
2/-	Silentbloc Ord.	13/-	7/6	10/-	11/-
5/-	Storey Bros.	28/6	13/1	34/-	36/-
2/-	Sussex Rubber Ord. ..	2/1	1/3	1/7½	1/7½
5/-	Sutcliffe Speak Ord. ..	15/6	6/3	12/-	15/6
£1	Turner & Newall Ord. ..	113/9	68/6	111/6	111/6
£1	,, ,, ,, 7% Pref.	25/6	22/6	24/-	23/3
5/-	Universal Asbestos Ord.	43/-	14/3	40/-	38/9
5/-	Viscose Dev. Ord. ..	15/-	9/-	15/-	15/-
5/-	Warne William (Holdgs.) Ord.	19/3	10/9	18/-	17/6

Rubber Markets

LONDON

Although trading has been at a low level in the London rubber market during the past week, the trend of prices has been firm and an all-round improvement has been recorded. The general confidence in the outlook for the commodity remains the chief reason for the firmness of the market. Prices are widely between ¼d. and ½d. per lb. higher.

Latest prices are as follows:

No. 1 RSS Spot: 34½d.-34¾d.

Settlement House:

April 34½d.-34¾d.

April/June 34⅝d.-34½d.

July/September 33⅝d.-33¾d.

October/December 32¾d.-33d.

January/March 32d.-32¼d.

No. 1 RSS cif basis ports:

April 34⅝d.-34⅞d.

May 34⅝d.-34⅝d.

Godown:

April 118⅝ Straits cents nominal.

LATEX

Centrifuged latex per gallon in drums, April, seller, 20s. 5d., cif European ports, Spot, 20s. 9d. Bulk, 19s. 10d. value. Creamed, seller, April, 19s. 11d. Normal, seller, April 15s. 8d.

AMSTERDAM

The Amsterdam rubber market ruled as follows on March 21:

	Guilders per kilo	
No. 1 RMA	Mar. 21	Previous
March	3.39	3.39
April	3.37	3.35½
May	3.37	3.35½
June	3.37	3.35½
April/June ..	3.37	3.35½
July	3.27	3.25½

Sales: 75. Tendency: Very steady.

DJAKARTA

Small amounts of sheet No. 1 for ready delivery, about 40 tons, were sold at 40 to 40.50 rupiahs per kilo on March 21. The market closed quiet. Buyers failed to show interest.

	Rupiahs per kilo	
	Mar. 21	Previous
Spot No. 1 Priok ..	39.50b	39.25b
Spot No. 2 Priok ..	38.50b	38.25b
Spot No. 3 Priok ..	37.50b	37.25b
No. 1 fine pale crepe, spot	38.25b	38.00b

Tendency: Quiet.

SINGAPORE

The market ruled very quiet on March 21 and there was little interest in anything except No. 1 RSS. Some small enquiry for offgrades was met at ruling discounts. Factories kept out of the market. The pattern of trading in the afternoon was unchanged throughout. The turnover was light. Interest was centred mainly in No. 1 RSS. Factories showed small interest. Close was steady but quiet. After-hours, the market was dull.

	Straits cents per lb., fob Malayan ports to open ports	
	Mar. 21	Previous Close
No. 1 RSS, Apr.	120¼–120⅜	119⅝–119¾
May	119⅜–120	119⅛–119⅜
No. 2 RSS, Apr.	118 –118⅜	117⅜–118⅛
No. 3 RSS, Apr.	116¼–117	116¼–116⅜
No. 4 RSS, Apr.	115 –115½	114⅝–115⅛
No. 5 RSS, Apr.	112 –113	111⅞–112⅝
No. 1 Spot ..	120⅜–120½	119⅜–120
No. 3 blanket, thick remilled, Apr.	114 –115	114 –115
No. 1 fine pale crepe, Apr. ..	133 –134	133 –134
2X thin brown crepe, Apr. ..	113¼–114⅛	113¼–114⅛

Tendency: Quiet.

The Industries Syndicate quote latex, native produce, 60% centrifugal, packed in rectangular drums fob at 210.00d. per gallon.

BANGKOK

No. 1 RSS

The price of No. 1 RSS at Bangkok on March 21 was 37.75 (37.75) US cents per lb.

NEW YORK

The New York rubber market ruled as under on March 21:

DEALERS' PRICES

	U.S. cents per lb. ex-dock	
	Mar. 21	Previous
No. 1 RSS, April ..	40⅜s	41s
May ..	40⅜s	—
No. 2 RSS, April ..	40⅜s	41s
May ..	40⅜s	—
No. 3 RSS, April ..	40⅜s	40⅞s
May ..	40⅜s	—
No. 1 RSS, Spot ..	40⅞s	41⅛s
No. 3 amber blanket crepe, June ..	39⅛b–39⅜a	—
No. 1 latex thin crepe, April	45⅛n	—
No. 1 latex thick crepe, April ..	43⅜n	—

FUTURES—REX CONTRACT

	Mar. 21	Prev. Close
March ..	40.90t	41.50b–41.70a
May ..	40.55t	40.85t
July ..	39.70t	39.95t
September	39.00b–39.20a	39.45b–39.60a
November	38.30b–38.60a	38.60b–39.00a
January ..	37.60b–37.80a	37.90b–38.15a
March ..	36.80b–37.20a	37.30b–37.50a

Sales: 68. Tendency: Barely steady.

Rubber futures were softer on March 21 on trade selling. Activity was moderate and coming mostly from trade interests. Physical rubber was barely steady. Buying interest was light. In the closing stages futures were barely steady.

CEYLON

No. 1 RSS

The price of No. 1 RSS spot at Colombo on March 21 was 140 (139) Ceylon cents per lb.

NEW INDIAN RUBBER CHEMICAL PLANT

Construction will soon begin on plant to manufacture rubber chemicals at a cost of Rps. 2 crores, it has been revealed by Mr J. M. Lall, chairman of the Alkali and Chemical Corporation of India Ltd., a subsidiary of I.C.I.

The proposed unit is to be located near Calcutta, and it will be erected under an agreement with the company's technical advisers, I.C.I., London, who will provide the know-how and the finance required to cover the cost of machinery, which must be imported. Considerable saving in foreign exchange, estimated at Rps.1 crore annually, is expected when the plant begins production. There were other plans also on the drawing board which the chairman said would be revealed later this year.

The chairman, who was speaking at the 1959 annual meeting, reported a 31% increase in 1959 sales, of which the polythene plant which started production in May last year contributed the most. Export sales had grown and means of increasing them were being examined, he said.

STOCK MARKET

Continued from page 486

that net profits had expanded sharply from £311,537 to £500,450. The dividend in this instance is going up 10% to 30%. The company's materials are used in a wide range of consumer articles.

BRITISH INDUSTRIAL PLASTICS has agreed to acquire the capital of HORNFLOWA. The consideration is 351,852 of their 2s. shares which do not rank for the one-for-one share bonus or the final dividend.

Plastic moulders ROBERT MCARD have increased their dividend by 5% to 30%. Profits are up from £32,134 to £50,643, and after tax of £19,518 (£13,556) the net figure shows an improvement of £31,125 against £18,578.

Lord Chandos, chairman of the ASSOCIATED ELECTRICAL INDUSTRIES group, has decided to hold the dividend payment to shareholders at 15% for another year. After heavier depreciation provision and including a profit on the sale of investments and miscellaneous assets, there was very little change in the group's profit at £11,097,880, compared with £11,069,056.

LAPORTE INDUSTRIES delighted the market with its announcement of a one-for-five share bonus and forecast of a final dividend of 7½% on the larger capital. With the 3% interim it will be equal to 12% on the existing capital. Earnings are expected to cover the new rate approximately the same as in recent years.

Industry INTELLIGENCE

Technical Data

Aroclors in Polyester and Epoxy Resins

The Aroclors are a range of chlorinated diphenyls and polyphenyls, three of which have proved to be economical and efficient as dual-purpose fire-retardants and plasticizers. These are Aroclor 1260, Aroclor 4465 and Aroclor 5460, and the use of these three Aroclors in polyester and epoxy resins is described in Technical Service Bulletin No. G5/1, issued by Monsanto Chemicals Ltd., Monsanto House, 10-18 Victoria Street, London, S.W.1.

The Aroclors are generally used in combination with antimony trioxide, itself a fire-retardant. This combination is particularly effective, as the two substances are synergistic and together give a degree of fire-resistance which is adequate for most possible uses. Results of fire-resistance tests on polyester and epoxy resins containing a series of proportions of Aroclor 1260, Aroclor 4465 or Aroclor 5460 are reported in the bulletin and show the effectiveness of these Aroclors in increasing the fire-resistance of the two resins. Data are included for the mechanical properties of woven glass-cloth laminates of a polyester resin containing 10% and 20% of each of the above three Aroclors and a plasticizing polyester for comparison. At a concentration of 10% (enough for purposes of fire-retardance) none of the Aroclors reduced the flexural strength of the cured resin significantly, and their effect was comparable with that of a plasticizing polyester.

Colourants for Rigidex Polythene

Many dyes and pigments recommended for use in conventional polythene have been examined in Rigidex polythene with particular emphasis on heat stability. The suitability of the colourants has been studied using the following criteria: (1) Dispersability during compounding. (2) Stability at processing and moulding temperatures. (3) Insolubility in the polymer (solubility allows migration of colour). (4) Light stability. (5) Effect on polymer properties. The results are reported in Rigidex Technical Information Sheet No. 7, issued by British Resin Products Ltd., Devonshire House, Piccadilly, London, W.1.

The heat stability of the dye or pigment is important since, due to its higher softening point, it is often necessary to process Rigidex polythene at temperatures higher than those used for conventional polythene. The information sheet contains a list of colourants —red, orange, yellow, green, blue, violet, brown, white and black—which have passed the tests for suitability for use in Rigidex polythene.

Viton in Mechanical Goods

Viton is a heat-resistant and chemically-resistant elastomer available in two grades, A and B. The compounding and processing of Viton and its use in mechanical goods are described in Du Pont Elastomer Chemicals Department Report BL-360, by T. D. Eubank and E. Tufts, available in the UK from the Du Pont Co. (UK) Ltd., 76 Jermyn Street, London, S.W.1.

The use of acid acceptors, curing agents, fillers and plasticizers in Viton is discussed with data for properties of the cured material showing the effects of these ingredients. Mixing, extruding, calendering, moulding and curing of Viton stocks are described. The latter half of the report gives formulations for Viton compounds for hose, tank linings and rolls, as well as for moulded mechanicals to meet a stringent specification for high-temperature use. The bonding of Viton to metals is also discussed.

Machines, Materials and Equipment

Constant-Voltage Source

The Type 3 Reference Unit is a completely new solid-state dc reference source designed, developed and produced by George Kent Ltd. of Luton, Beds., for use with their range of electronic self-balancing recorders, indicators and controllers. A compact plug-in assembly operating directly from the normal ac mains supply, it provides an extremely stable, ripple-free output of 5.0mA at 5V for the slide-wire of the instrument measuring circuit.

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The dc output is isolated from earth, and a specially screened and balanced mains transformer effectively isolates it from the mains supply. This feature is of great value in certain measuring circuits having a finite impedance to earth.

Specification: Supply: 200 to 250 V (by six-positioned selector); 40 to 60 c/s. Power consumption: 3 VA. Output: 5.0 mA dc at 5.0 V. Accuracy: ± 0.05% (at 40°C.; nominal supply). Output variation: less than ± 0.05% for ± 30°C.; less than ± 0.05% for ± 10% supply variation. Output ripple: less than 0.01% rms. Maximum ambient temperature: 80°C.

New Publications

This is Rubber

The Rubber Manufacturers' Association Inc. have issued a very interesting brochure—'This is Rubber Today'—showing the work of the rubber industry throughout the USA. Lavishly illustrated, it gives a brief background to the industry, telling interested businessmen in other industries of the vast range of products that use rubber.

An appendix gives statistics in table form, but they are also presented diagrammatically in the text, and the whole booklet provides an attractive shop window for rubber in the USA.

A Technical Information Service to Architects

A four-page leaflet published by Barbour Index Ltd., 81 Charlotte Street, W.1, describes the technical information service to architects which they perform on behalf of manufacturers of building products.

The leaflet points out that the wide range of building materials, equipment and systems available to the architect, and the number of items required to complete a single building, make an orderly source of information essential. Barbour Index is said to provide and regularly maintain a library in the architect's drawing office, containing fully classified manufacturers' information. This is filed and indexed in such a way that any item is instantly located when required. There is also a research department to meet requests from architects for details of unusual products.

Eclor

Industrias Quimicas Eletro Cloro ('Eclor') one of the largest chemical concerns in South America, have issued a brochure describing their activities. As well as refining salt and manufacturing chlorine and caustic soda, the firm is a big plastics producer, being particularly concerned with PVC. A lavishly illustrated brochure describes production of this and other compounds.

Plastics Plumbing

The Folkard group has published the first international edition of 'The Struggle Against Corrosion.' This 60-page brochure contains the full range of Vulcathene plumbing equipment covering pipes and pipe fittings, valves and vessels. Comparative costing is given, and there are sections on pipes, clips, couplers, loose flanges, bends, branches and junctions; a series of thread tables and a page on chemical resistance.

BOOK REVIEW

THE ENGINEER BUYERS' GUIDE—1960. (Published by Morgan Bros. Ltd. 974 pp. 9s. 3d.)

All entries in this guide are limited to firms—1,849 of them—which advertise in 'The Engineer' or the 'Buyers' Guide.' The buyers' guide section itself contains 768 pp.—34,750 entries under 2,650 classified headings.

Other sections include associations and institutions connected with the engineering industry, trade names and addresses, exhibitions and UK agents for foreign firms. The rubber section includes the following classifications: extruded sections, mechanical rubber goods, machinery, mouldings, sheets and synthetic. Some of the headings in the plastics section are: raw materials, sheets, rods and tubes, moulding powders and moulding machinery.

The list of suppliers is certainly comprehensive in most cases, but confining the guide to advertisers gives an unfortunate impression. It may also lead to surprising omissions—such as the omission of the International Synthetic Rubber Co. Ltd. from the list of suppliers of synthetic rubber.

∴ Copies may be ordered through the Books Department, RUBBER JOURNAL AND INTERNATIONAL PLASTICS, Maclaren House, 131 Great Suffolk Street, London, S.E.1.

Increases of Capital

Glass Fibre Developments Ltd. (593,090). Manufacturers and dealers in Plastic materials, etc., 16 Cornwall Gardens, Brighton, Sussex.—Increased by £24,500 in £1 ordinary shares, beyond the registered capital of £500.

Kamuning (Perak) Rubber and Tin Co. Ltd. (103,964). 52/4 Gracechurch Street, E.C.3.—Increased by £175,000 in 2s. ordinary shares, beyond the registered capital of £400,000.

Future Events

INSTITUTION OF THE RUBBER INDUSTRY

Burton-on-Trent Section.—Monday April 4 at the Midland Hotel, Burton-on-Trent, at 7.30 p.m. Annual general meeting and 'Vinyl Plastics' by S. Mottram (British Geon Ltd.).

South Wales and Monmouthshire Section.—Monday April 4 at the Royal Hotel, Cardiff, at 7.30 p.m. Annual general meeting followed by a discussion on 'Fundamental Unsolved Problems in the Rubber Industry.'

PLASTICS INSTITUTE

London Section.—Tuesday April 5 at the Wellcome Building, 183/193 Euston Road, N.W.1, at 6.30 p.m. Chairman's lecture: 'Where Plastics are Going,' by J. Gadsby (I.C.I.).

NEW COMPANIES

Flora Plastics Ltd. (651,091).—March 2. Capital: £100 in £1 shares. The directors are: Lionel Phillips, 15 Russell Hill, Purley, Surrey; William K. Phillips, 5 Totnes Walk, N.2. Solicitors: Alan, Edmunds and Phillips, W.1. Regd. office: 415 Oxford Street, W.1.

Levecto Ltd. (650,888).—February 29. Capital: £100 in £1 shares. To acquire the business of plastics manufacturer carried on by G. P. Cooper at Station Road, Fordingbridge, etc. The directors are: George P. Cooper and Brian G. Cooper, both of Beechwood, Bassett Wood Drive, Bassett, Southampton. Regd. office: 27 Hanover Buildings, Southampton.

Vacuform Plastics Ltd. (650,915). — February 29. Capital: £100 in £1 shares. To carry on the business of manufacturers of and dealers in plastic, modelling and moulding materials, substances and compositions, rubber, gutta percha, vulcanite, etc. The directors are: Donald J. F. MacDonald, Woodgate Dean Row Road, Wilmslow, Cheshire, and Edna MacDonald, Woodgate Dean Row Road, Wilmslow, Cheshire. Regd. office: Green Street, Alderley Edge, Cheshire.

TRADE MARKS

Objections to the registration of any of the undermentioned applications may be lodged with the Comptroller-General of Patents, Designs and Trade Marks at the Patent Office, 25 Southampton Buildings, Chancery Lane, London, W.C.2, within one month of the date mentioned. The objections must be stated on Trade Marks Form No. 7, cost £2, obtainable through any money order office. The extracts—from 'The Trade Marks Journal'—given below are reproduced by permission of the Controller of H.M. Stationery Office.

SHELL (795,319) Insulating oils and insulating varnish; materials, being petroleum products, for packing included in Class 17, stopping, and insulating; artificial rubber (not for use in the manufacture of footwear); plastics included in Class 17 in the form of blocks, strips, slabs, sheets, films, rods, tubes and shaped sections, all for use in manufactures; and asbestos and asbestos compounds included in Class 17, all being for sale in the United Kingdom and for export except to Aden, British Guiana, French Guiana, Surinam, Barbados, Leeward Islands, Guadeloupe, Martinique, Grenada, St. Vincent, St. Lucia, Puerto Rico, Somaliland Protectorate, French Somaliland, the United Nations' Trustee Territory of Somaliland, Eritrea, Hejaz, Ethiopia, Northern Rhodesia, Southern Rhodesia, Nyasaland, Colombia, Dominican Republic, Haiti, Jamaica, Panama, Gibraltar, British Honduras and the British Solomon Islands, The Shell Petroleum Co. Ltd., St. Helen's Court, Great St. Helens, London, E.C.3. (Class 17; February 2 1960).

STAB-U-CEL (790,337) Chemical compositions for use in controlling the moisture distortion of cellulose materials. The Upson Chemical Corp., Lockport, USA. Address for service is c/o Stevens, Langner, Parry and Rollinson, 5 to 9 Quality Court, Chancery Lane, London, W.C.2. (Class 1; February 16 1960).

ALFENE (709,812) Olefins, being chemical substances for use in industry. Continental Oil Co. (Nederland) N.V. Coolsingel 57, Rotterdam, Holland. Address for service is c/o W. H. A. Thiemann, Prestige House, 14 to 18 Holborn, London, E.C.1. (Class 1; February 16 1960).

FLEXOCEL (795,820) Plastics in the form of powders, pastes, liquids, emulsions, dispersions and granulates, all being for industrial use. The Baxenden Chemical Co. Ltd., Clifton House, 83-117 Euston Road, London, N.W.1. (Class 1; February 16 1960).

R·J·I·P·

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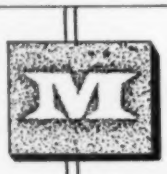

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PUBLISHED FOR
RUBBER JOURNAL & INTERNATIONAL PLASTICS
MACLAREN HOUSE · 131 GT. SUFFOLK STREET · LONDON, S.E.1

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